THE NEWSWEEKLY OF INFORMATION SYSTEMS MANAGEMENT
March 4, 1991 · Vol. XXV · No. 9 · 116 Pages · $2/Copy · $48/Year

COMPUTERWORLD

SPECIAL REPORT: THE WINDOWS PAYOFF

Canadian credit firm rates OS/2 Extended a net risk

Version 1.2's host links, IBM service fall flat

BY MICHAEL FITZGERALD
CW STAFF

HALIFAX, Nova Scotia — Distribute mainframe functions to networked PCs? For Trans Canada Credit Corp., that promise proved too good to be true.

Problems with IBM's OS/2 Extended Edition Version 1.2 have forced the company to abandon plans to implement an ambitious 150-site network and instead put the application on a cheaper IBM mainframe and dumb terminal setup.

TCC, a subsidiary of $15 billion-in-assets Central Guaranty Trustco Ltd., said OS/2 Extended Edition has problems with functionality, remote network management issues and IBM's inability to provide effective service.

Things are different

Each of TCC's offices was to run its operations from an OS/2 network connected to a host IBM 3090 mainframe in Toronto. Now, a combination of the 3090, IBM 3174 controllers, dumb terminals and stand-alone Personal System/2s will run the offices.

Dan Montgomery, manager of distributed systems at Central Guaranty Trust, said technical glitches such as interface problems between OS/2 and CICS on the host stalled the project after 30 sites had been rolled out, leading to its eventual demise. Despite these problems, TCC will continue with a stabilized and functional OS/2 in its branch offices until it implements the IBM 3174 controllers and terminals.

"The experience has been unfortunate, but the system is not a major operational or financial problem because the system has been stabilized in the 30 branches that have it, and we'll

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IBM users get outsource itch

BY CLINTON WILDER
CW STAFF

FRAMINGHAM, Mass. — IBM mainframe-based shops are far more interested in outsourcing than companies using other hardware platforms, according to research that will be presented this month by International Data Corp.

More than 30% of the 264 IBM mainframe users surveyed said they are either considering or actively pursuing outsourcing, compared with about 18% of the entire survey base. IDC, a market research firm, surveyed 1,500 U.S. information systems organizations between Nov. 15, 1990 and Jan. 7, 1991.

Shifting priorities

IBM mainframe sites are more interested in outsourcing than are users of other equipment

Source: International Data Corp. CW Chart: Tom Monahan

The survey revealed another potential threat to IBM mainframe hegemony in the form of moving applications to smaller platforms or downsizing. As with outsourcing, IBM mainframe shops showed the most interest, with 62% gradually or strongly pursuing downsizing. That was not dramatically different at sites using other equipment: 57% of non-IBM mainframe users said they are downsizing, as did 54% of Digital Equipment Corp. shops.

The pressure to downsize was borne out by a question on budgets. More than half of those surveyed, 54%, identified mainframe and minicomputer hardware as the area in which they face the most budget pressure. Only 29% said they felt pressure in the personal computer, workstation or local-area network arenas.

Outsourcing interest among IBM mainframe shops "dwarfs all the others," said David Moschella, senior vice president at IDC. "In the IBM mainframe world it can be economically feasible and there are a lot of [outsourcing] suppliers out there."

By contrast, just over 13% of IS organizations with host mainframes from vendors other than IBM or DEC expressed any interest in outsourcing, while 87%

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The rebuilding begins

Computer and communications companies are joining the rush to get a share of the business of reconstructing Kuwait after the war devastated the country's infrastructure

- IBM has an agreement to replace stolen or destroyed machines
- AT&T will provide emergency service for outgoing calls
- Ericsson GE Mobile Communications will create a mobile communications network for returning government ministries
- Mitel is bidding to supply private branch exchanges

Details, other war coverage, page 6

SAA data access plan coming

Wheeler outlines user-transparent 'warehouse'

BY ROSEMARY HAMILTON
CW STAFF

ARMONK, N.Y. — IBM will present a broad plan for enterprisewide data access and delivery later this year, according to Earl Wheeler, a senior vice president and general manager at IBM's Programming Systems Division.

This latest Systems Application Architecture initiative, informally referred to as the "data warehouse," is characterized by Wheeler as a step beyond distributed databases. Yet it comes at a time when some of the basic SAA tools IBM has announced for database links have no announced shipment dates, and some observers said they do not expect them to be available for at least another year.

However, the warehouse concept is intended to give users a minimal number of access methods to request any data, regardless of its format or the operating environment in which it resides.

"What it says is, wherever your data is, on whatever hardware, on whatever operating system, in whatever structure — that data exists," Wheeler said. "With the minimum number of interfaces, perhaps one, we will retrieve that data for you and deliver it to your application that requested it or your

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Insurer lures away MCI's Ditchfield

BY CLINTON WILDER
CW STAFF

ARLINGTON, Va. — One of the nation's most successful technology chiefs, Allan Ditchfield of MCI Communications Corp., surprised his peers last week by leaving the telecommunications powerhouse for the top information systems job at a Cleveland-based auto insurance firm.

Ditchfield, whose leadership helped make MCI the most effective user of IS in the *Computerworld Premier 100* for two years in a row, will become senior vice president of information services at Progressive Corp. this week. Progressive, which has carved a successful niche by insuring "nonstandard" risks such as convicted drunk drivers, had been searching for a new IS chief for almost one year.

Ditchfield *leaves MCI for Progressive*

Ditchfield, 53, said he was contacted about the job less than one month ago, but he was not interested until he learned more about Progressive's business position and philosophy of IS. "I wasn't actively looking, and when I got a call about a job in the insurance industry in Cleveland, I was not too overwhelmed, initially," he said. "But they are poised for enormous growth, rely very heavily on information and have smart ways of applying it to underwriting."

One of Ditchfield's key MCI lieutenants, James Zucco, vice president of product development, was named last week to fill Ditchfield's post of senior vice president of IS. Zucco, 39, joined MCI in 1986 after consulting stints at Arthur Young and Nolan, Norton & Co.

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INSIDE

HP's upcoming RISC workstation rollout will leave the Apollo Domain operating system behind. Page 4.

You mean there's another DOS? Digital Research's DR DOS, an application-compatible alternative to Microsoft's operating system, is finding some proponents in corporate sites. Page 8.

ISDN pact leaves users cool; decade of promises wears thin as alternatives take hold. Page 85.

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Quotable

"This is all a last gasp for ISDN. Very few have chosen to take advantage of it."

KENNETH BOSOMWORTH
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"SOMEONE KEEPS GOING INTO MY PERSONAL FILE. I'D SURE AS HECK LIKE TO FIND OUT WHO USES THE PASSWORD 'PEANUT BREATH.'"

EXECUTIVE BRIEFING

■ **A major Canadian firm abandons its downsizing plan,** which called for a 150-site personal computer network to replace a mainframe application. Trans Canada Credit cites problems with OS/2 Extended Edition Version 1.2, including glitches with a CICS interface, in its decision. **Page 1.**

■ **The top IS executive at MCI joins Progressive Corp.,** a Cleveland-based auto insurance firm. Allan Ditchfield says he wasn't actively seeking a new job, but he was excited by Progressive's growth potential and heavy use of data in its business. MCI, which ranked No. 1 in the *Computerworld Premier 100* for the past two years, promotes software development head James Zucco to replace Ditchfield. **Page 1.**

■ **IBM confirms it has replaced** 1,000 to 2,000 faulty disk drives produced at a British manufacturing plant. The 9335 drives for midrange systems were replaced during the past year. Shipments of the next-generation 9336 drives are bogged down by production delays. **Page 85.**

■ **Kuwait enlists IBM, AT&T and others** to help rebuild its IS infrastructure after the war. Initial indications are that much rebuilding is needed. **Page 6.**

■ **Outsourcing is more popular in IBM mainframe shops** than in others, according to a survey of 1,500 IS sites. More than 30% of IBM mainframe sites are pursuing or considering the outsourcing option, compared with about 20% of DEC sites and just 13% of non-IBM mainframe users. **Page 1.**

■ **IBM cuts PC prices** 5% to 20% to counter earlier cuts by Compaq and other vendors. Analysts say IBM was forced to make the cuts to stay competitive and overcome gaps in its PC product line. **Page 84.**

■ **Sears' new centralized back-office system** is up and running on schedule in most of its 863 stores. The hub system streamlines financial applications and allows customers to pay credit card bills at any point-of-sale terminal. **Page 6.**

■ **NASD picks MCI** to manage security and disaster recovery for its nationwide network for over-the-counter stock trading. **Page 12.**

■ **An executive information facility** offers business managers not only internal data but links into external information such as the Dow Jones stock ticker. This facility can be at the core of a corporate "war room" from which strategic decision-making occurs. **Page 59.**

■ **Overseas IS experience** commands a premium as international businesses begin to operate in borderless, global markets. **Page 68.**

■ **Pizza Hut is serving** a new multimedia training solution to its restaurant managers. **Page 80.**

■ **IS managers are turning to hot sites** to guard their computer operations. To choose the right site, managers must balance equipment needs with cost, support and service, geography requirements and telecommunications capacity. **Page 76.**

■ **On-site this week:** A pilot Filenet imaging project at Orange County, Calif., Superior Court aims to convert 180,000 legal documents to optical disc and even place workstations on the judge's bench. **Page 46.** In adjacent Los Angeles County, engineers are fighting California's drought with an automated basin management system based on networked Compaq PCs. **Page 37.** Students will be on-line next fall at Bowling Green State University in Ohio, where PCs on dormitory desktops will access library databases and tuition accounts. **Page 40.** New scheduling and production software on Tandem computers keeps things running at AM General's Hummer military jeep factory in Mishawaka, Ind. **Page 27.** Sybase databases at Johns Hopkins University are tackling the intricacies of human gene structure. **Page 28.**

COMPUTER ASSOCIATES

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March 4, 1991

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HP pushes RISC workstations

BY J. A. SAVAGE
CW STAFF

PALO ALTO, Calif. — Leaping ahead in the market for reduced instruction set computing (RISC) systems, Hewlett-Packard Co. will announce a series of engineering workstations March 26 that will leave behind the Domain operating system acquired when HP bought Apollo Computer, Inc.

The HP 9000 Series 700 workstations, with the company's next generation of RISC architecture, will run at 57 to 76 million instructions per second (MIPS). The entry-level system will offer twice the performance at roughly half the price of systems currently offered by Sun Microsystems, Inc. and IBM, according to HP.

The workstations will be the first in which the Apollo division has taken the engineering lead, an Apollo spokesman said.

However, despite Apollo engineers' input, the systems will not run Domain, the old Apollo operating system, said Doug Eltoft, president of the Apollo Users Group. "Users are resigned to the fact that Domain is going to go away. They are putting their hope into OSF/1," Eltoft said.

Coexisting applications

Once HP puts its software layer, Distributed Computing Environment, on the Open Software Foundation's OSF/1, applications that run on Domain will be able to coexist with the new operating system, Eltoft said.

One year after HP and Apollo merged in April 1989, the company said the next generation of RISC architecture would incorporate some features of Apollo's Prism architecture.

At the low end will be the Model 720 running at 57 MIPS, according to Jim Hammons, an analyst at The Sierra Group, Inc. in Tempe, Ariz. The basic model will be diskless and will have 16M bytes of memory and a 19-in. monochrome monitor. It will be priced between $12,000 and $13,000, according to Cliff Friedman, an analyst at Bear Stearns & Co. in New York.

Work to do

HP/Apollo is having trouble keeping pace with Sun's growth in the workstation market

Percent of worldwide market share (by shipments)

	1990	1991*
Sun**	34.2%	43.3%
HP/Apollo	24.0%	22.5%
DEC	20.0%	18.6%
IBM	5.5%	6.9%
Total shipments	433,316	526,730

*Projected **Only includes Sparc

Source: Workgroup Technologies, Inc

At the high end, the Model 750 will run at a faster clock speed and will generate over 70 MIPS, Friedman said. That computer will cost about $30,000.

At the entry level, the HP workstation will cost $227 per MIPS. HP's current RISC multiuser systems run at $2,750 per MIPS for its HP 9000 Model 852S. Comparatively, at the low end, Sun's 28.5-MIPS Sparcstation 2 costs $526 per MIPS, and IBM's 29.5-MIPS RISC System/6000 Powerstation 320 costs $472 per MIPS.

At the high end, Sun charges $4,420 per MIPS for the Sparcserver 490, and IBM charges $2,443 per MIPS for its Powerstation 550.

HP's current generation of RISC machines, the HP 9000 Series 800, is aimed at multiuser, commercial environments. Floating-point performance and graphics are usually associated with single-user engineering workstations.

Sun and HP pledge oneness in object-oriented business

BY J. A. SAVAGE
CW STAFF

REDWOOD CITY, Calif. — Putting aside their differences in system software direction and their cutthroat rivalry in the workstation bazaar, Hewlett-Packard Co. and Sun Microsystems, Inc. met last week to propose an object-oriented standard for sharing information in a networked environment.

HP and Sun's proposal was one of seven submissions to the Object Management Group (OMG) — a group of over 100 vendors whose goal is to develop a common framework for object-oriented applications. The group is attempting to create a standard level of software that can show where data objects reside on a network and can manage their movement irrespective of the operating system.

A decision by the OMG is expected in August, and if chosen, HP and Sun's software will work on the two premier versions of the unified Unix operating system, the Open Software Foundation's OSF/1 and AT&T's Unix System V, Release 4, said Webb McKinney, general manager of HP's Cooperative Object Computing Division.

Microsoft Corp.'s OS/2 operating system will be included "over time," McKinney added.

A standard would make it cheaper and faster for software developers to embrace object-oriented applications, both companies agreed.

No matter which vendor's submission is chosen, other object-oriented vendors will have the choice of licensing from the chosen vendor or writing to the chosen interface, said Liz Freburger, manager of Digital Equipment Corp.'s object-oriented program.

Poles apart on interfaces

HP and Sun got together on this level of software, despite different attitudes on other parts of Unix system software. Sun swears by its graphical user interface, Open Look, and HP will not budge from the OSF's Motif, although last month, HP provided Motif-based software that will run on Sun's hardware.

"The graphical user interface discussion is up another level. We wanted to get to more real things besides arguing between Motif and Open Look," said Ed Zander, president of Sun's new software business, Sunsoft, Inc.

McKinney said the companies had been discussing the co-sponsored submission for more than two years at the OMG. It was not, as one analyst suggested, that they recently found something in their shared Silicon Valley water "that made common sense break out."

The deal appears similar to one announced by IBM and Mountain View, Calif.-based Metaphor Computer Systems, Inc. this past September. The resulting company, Patriot Partners, is set to develop software for Unix and Microsoft's OS/2 operating systems, which would shield the complexities of different operating systems from software developers.

Speedier Aviion on-line

BY SALLY CUSACK
CW STAFF

WESTBORO, Mass. — In what may be its biggest announcement since the introduction of the Aviion workstation two years ago, Data General Corp. is expected to unveil a 100 million instructions per second (MIPS) Aviion server next month.

Rather than being aimed at the workstation market, the system will be positioned for the commercial on-line transaction processing (OLTP) market.

According to Bill Sines, director of midrange systems research at Technology Investment Strategies Corp. in Framingham, Mass., the DG announcement, scheduled for March 13, will mark the appearance of a quadprocessor Motorola, Inc. 88000-based Aviion server with symmetric multiprocessing capabilities.

David Novy, a DG Aviion user and technical computing specialist at a large Midwestern manufacturing firm, said a 100-MIPS Aviion would complete the product's transition from a workstation to a high-capacity network server and position DG as a serious contender in the commerical OLTP marketplace.

Some analysts said such a product could give DG the niche market it has been looking for, provided it can compete in price/performance against early entries in Unix transaction processing such as AT&T, NCR Corp. and Sequent Computer Systems, Inc.

"If OLTP is their thrust, they are going to have to include some software with this announcement, particularly things like scheduling and loading, balancing and performance monitoring," said George Weiss, an analyst at market research firm Gartner Group, Inc.

Little competition

Weiss noted that aside from Motorola, DG is the only significant hardware player in the 88000 marketplace, and much of its success will depend on the quality and quantity of third-party software vendors willing to port to the 88000 architecture.

Sources said DG has obviously made some changes to the DG-UX kernel and speculated that the product will include leading-edge technology such as redundant arrays of inexpensive disks, hierarchical storage management and fault tolerance.

"This four-way processor technology gives DG a 12- to 15-month jump on IBM and may make some hay with the value-added resellers," Weiss said. "Obviously, DG figures that no one has a monopoly on this market yet and that they have as good a shot as anyone else."

CORRECTIONS

"IBM enhances high-end tape drive capacity" [CW, Feb. 25] should have referred to its older generation as the 3480 instead of the 3380. IBM will discontinue marketing 3480 models. No such announcement was made for the 3380 disk drives.

"ISDN for the masses" [CW, Jan. 28] should have said that the ISDN Primary Rate Interface's D channel supports 64K bit/sec., not 16K bit/sec.

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U.S. vendors enlisted to help rebuild Kuwait

BY MITCH BETTS
CW STAFF

The Kuwaiti government last week began lining up U.S. vendors such as IBM and AT&T for help in rebuilding the country's war-ravaged technology infrastructure.

IBM has signed a preliminary agreement to help Kuwait "replace all machines either stolen or destroyed" during the Persian Gulf war, said IBM spokesman Mac Jeffery in Armonk, N.Y. "Apparently, computers are a significant component of the early reconstruction plans."

Meanwhile, employees at Saudi Aramco, Saudi Arabia's oil conglomerate, are reportedly itching to seize what they see as golden opportunities in Kuwait, according to one American information systems employee at Aramco who asked not to be named.

A Saudi-based chapter of the American Business Association is informally coordinating dissemination of information on opportunities in Kuwait. "I think a lot of us will respond to it," the employee said.

Several weeks ago, the Kuwaiti government-in-exile contacted Gulf Business Machines, a Bahrain-based IBM dealer, about helping with the recovery effort, Jeffery said. IBM's regular dealer in Kuwait, Khorafi Business Machines, "dropped out of sight Aug. 2, and we don't know its status," Jeffery said.

Details about IBM's computer replacement program will not be available until a damage assessment is completed, Jeffery said.

AT&T said it will provide emergency telephone service so Kuwaiti residents can make outgoing calls for the first time since Aug. 7. The rudimentary service involves a portable satellite dish and a bank of 120 telephones in Kuwait City, AT&T spokesman Andy Myers said.

Representatives of AT&T and the Kuwait Ministry of Communications are conducting a damage assessment to determine what is needed to rebuild the country's regular telecommunications network.

Dozens of AT&T employees were working on a telecommunications modernization project when Iraqi troops invaded Kuwait Aug. 2.

Another form of emergency communications will be provided by Ericsson GE Mobile Communications, a Paramus, N.J.-based joint venture of Ericsson Corp. and General Electric Co. The firm was awarded a multimillion dollar contract from the Ministry of Communications to provide a mobile land radio communications network for the returning government ministries, Ericsson spokeswoman Kathy Egan said.

Mitel Corp. in Ottawa has submitted bids to supply private branch exchanges to Kuwait, a spokeswoman said, but it has not received word on whether it has won the contract.

Senior Writer Richard Pastore contributed to this report

Marines build high-tech muscle

As the number of U.S. Marines sent to the Persian Gulf rose to some 70,000, the Marine Corps found that its two IBM 9377 Model 90 mainframes in Saudi Arabia could not keep up with the work load. So the Marines recently installed a more powerful EX-33 mainframe from Hitachi Data Systems Corp. and high-capacity storage peripherals to handle personnel and logistics data processing, according to the Marines.

The hardware was installed in a transportable trailer called the Force Automated Services Center, which measures 8- by 8- by 35-feet.

.....

The U.S. Central Command in Saudi Arabia may be one of the biggest users of Microsoft Corp.'s Windows software in the world. Under contracts with Compuadd Corp., the command has 2,476 desktop and laptop computers loaded with Windows 3.0. It also bought 1,791 packages of Microsoft's Project for Windows, making the war headquarters one of the top three users of the project management software, a Microsoft spokeswoman said.

.....

The best way to send a letter to Operation Desert Storm soldiers is through electronic information services, military postmaster Mike Whitaker told pool reporters in Saudi Arabia. He said letters sent via computer networks such as Genie and Prodigy take only three or four days to arrive, compared with several weeks for conventional letters. The electronic mail is transmitted to a facility in Saudi Arabia that prints it out and distributes it to military bases.

Similarly, the Association for Electronic Communication in Roeland Park, Kan., has been collecting mail messages from 1,300 bulletin board systems for transmission to Saudi Arabia. The military welcomes the E-mail because it reduces the volume of mail carried on military planes ferrying equipment and supplies to the troops.

Whitaker said soldiers are also receiving facsimile transmissions from home. "One soldier got the footprints and handprints of his newborn baby faxed to him," he said.

.....

The military must fill out forms, even in a war zone. So the U.S. Central Command ordered 350 copies of Perform, a forms processing software package from Delrina Technology, Inc. in Toronto. The $100,000 order included digital versions of 60 of the Pentagon's most used forms, including requisition forms and "Secret" cover sheets.

Compiled by National Correspondent Mitch Betts.

SAA

FROM PAGE 1

decision support system."

While the end result sounds straightforward, it will likely be a highly complex task to provide relational and nonrelational SAA data, non-SAA data and even non-IBM data to users via a few standard access methods.

Paul Hessinger, chief technology officer at Computer Task Group, Inc., said IBM's Distributed Relational Database Architecture, announced last year, could provide the distribution mechanism for users, while the warehouse would be the place where users could "take things out of inventory."

"It is the technology to extract data from multiple data stores, to massage it and then present a usable file to a user on a workstation," Hessinger said.

Emmanuel Ackerman, manager of data administration at Depository Trust Co., said he heard a presentation by IBM late last month on a "global data architecture."

"This sounds like it would definitely help data administration and could bring us to the next step of having a mainframe as a big corporate file server," he said.

Hessinger said IBM's repository will play a big role by managing and maintaining a warehouse model that governs this structure. He also described it as a complex topic involving multiple technologies that will call for third-party involvement, as the AD/Cycle strategy does.

In fact, Wheeler's plan is to map out a strategy or framework for users in much the same way he rolled out the plan for application development. "Around June or July, we will begin talking about it like we talked about AD/Cycle three or four months before we introduced it," he said.

"We will be gluing the disparate products together, so it's going to be an evolutionary journey," Wheeler added.

Users and analysts said they were unfamiliar with the plan but would welcome such a blueprint.

"We are certainly interested in working to be able to access data wherever it may be, particularly when it's not IBM platforms," said Dick Stromberg, a consultant in information systems at Du Pont Co.

However, some users and observers raised concerns that an architecture could be long on strategy and short on real products for some time.

"I have one problem here, and it's the same problem I have about lots of SAA," said George Schussell, president of Digital Consulting, Inc. "Nice concept, but the engineering takes four times longer than it should take."

However, Daniel J. Cavanagh, a senior vice president at Metropolitan Life Insurance Co., said he would find a long-term architecture useful. "The architecture statements are sometimes criticized, but as a customer, I need this," he said.

Back-office system up and running at Sears

BY MICHAEL FITZGERALD
CW STAFF

CHICAGO — The back office at Sears, Roebuck and Co. will be a little different this week, thanks to the information systems department's meeting a major deadline at Sears' Merchandise Group.

March 1 was the stated deadline for rolling out what Sears calls "the Hub," a centralized system for back-office functions that, in some cases, were done by hand and a new set of customer service options centered largely on giving customers direct lines to Sears' service groups.

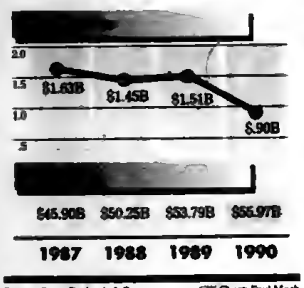
The Hub was up and running in 843 of its 863 stores, the company reported.

The purpose of the Hub strategy is twofold. On the one hand, Sears wants to improve its customer service.

On the other hand, the Merchandise Group, which runs the retail arm of Sears, is battling slumping profits and has lost its long-standing place as the nation's No. 1 retailer, slipping to third place behind discounters Wal-Mart Stores, Inc. and K Mart Corp. Installing back-office systems in-store is expected to help Sears eliminate 21,000 positions and slash $250 million per year from its operating expenses.

Sears slips

Slow growth at Sears shrunk profits last year, spurring cost-cutting measures



Source: Sears Roebuck & Co. CW Chart: Paul Moch

Now Sears has organized its customer service into one center and gives customers the option to call service representatives directly rather than going through the customer service desk.

In the back office, general ledger, payroll, time card and accounting functions that had been done by hand for years are now automated. Customers will also be able to pay their Sears credit card bills at any point-of-sale terminal in a store.

The changes have been immediately effective, according to J. Kevin Coffee, manager of the Sears store in the Orland Square shopping mall in Orland Park, Ill. The Orland Square store was one of Sears' 10 test stores for the back-office project.

Coffee said the shift to automation has greatly improved store efficiency and has improved his ability to do his own job.

Sears had no comment on when it would automate the remaining 20 stores.

Transaction council asks IBM, Unisys to restructure benchmarks

BY J. A. SAVAGE
CW STAFF

Noting that IBM and Unisys Corp. took advantage of low-cost storage media to weight their transaction processing benchmarks, the Transaction Processing Performance Council recently voted to ask the two companies to redo their benchmarks.

"Up to now, everyone used hard disks. IBM and Unisys used tape drives, which cost less, and, as a result, had a better price/performance ratio," said Kim Shanley, spokesman for the organization. The 37-member council is a nonprofit consortium whose mission is to put out a standard benchmark for transaction processing.

Shanley said the council, which gave IBM and Unisys 90 days to rerun their tests, considered the transgressions "an honest mistake." He added that the council's specifications required there be eight hours worth of on-line storage and that storage must be able to be randomly accessed within one second.

Unisys, which is set to announce transaction benchmarking results on its mid-range and high-end Micro A systems Wednesday, would not detail which systems were the target of the council's vote, but according to Frank Stephens, an in-house systems design consultant at the company, what the company has published so far on its low-end Micro A and U6000 series followed the council's data storage procedures.

No confusion intended

An IBM spokeswoman noted that the complex TPC/A structure was open for ambiguity and that IBM was not trying to be misleading. She said IBM will reprice its results, and the addition of disk prices should have a minimal, perhaps 5%, impact on the total price.

IBM's disputed benchmarks on a local-area network for its RISC System/6000 Model 550 produced 32 trans/sec. and cost $20,400 per transaction. Three other models were also cited.

Unisys would not make its disputed benchmarks available.

In comparison, Tandem Computers, Inc. published a benchmark on a wide-area network of $28,850 per transaction for its CLX 840 and $31,290 per transaction for its CLX 820 with 25.9 and 13.2 trans/sec., respectively.

Hewlett-Packard Co. benchmarked its HP 9000 Model 842S on a LAN at 33 trans/sec. at a cost of $25,500 per transaction.

Canadian

CONTINUED FROM PAGE 1

be reusing the equipment when we implement the new platform," said Bill Rowe, vice president of information technology services at Central Guaranty.

Still, there is disappointment and frustration that the project did not go through.

"Basically, OS/2 proved to be unserviceable in the field," said John Williams, OS/2 project manager at TCC. Williams and Montgomery agreed that handling upgrades or fixing software problems at remote sites was more than TCC could handle from within its 200-person information systems staff, and IBM was unable to provide effective service.

"The thing that got utterly maddening was that we couldn't predict when something would happen or wouldn't happen," Montgomery said. "We'd have problems reported out in the field, and we couldn't duplicate them in our model office here."

Not up to par

While IBM resolved some of the issues facing TCC, such as a tendency for the local-area network to crash when documents were printed, its service fell short, despite a last-minute push to save the project, which was canceled in December.

An IBM spokeswoman said Version 1.3 of OS/2 Extended Edition, which shipped at the end of December, corrected many of the problems with OS/2 Extended Edition Version 1.2, and IBM said it was providing effective service to TCC.

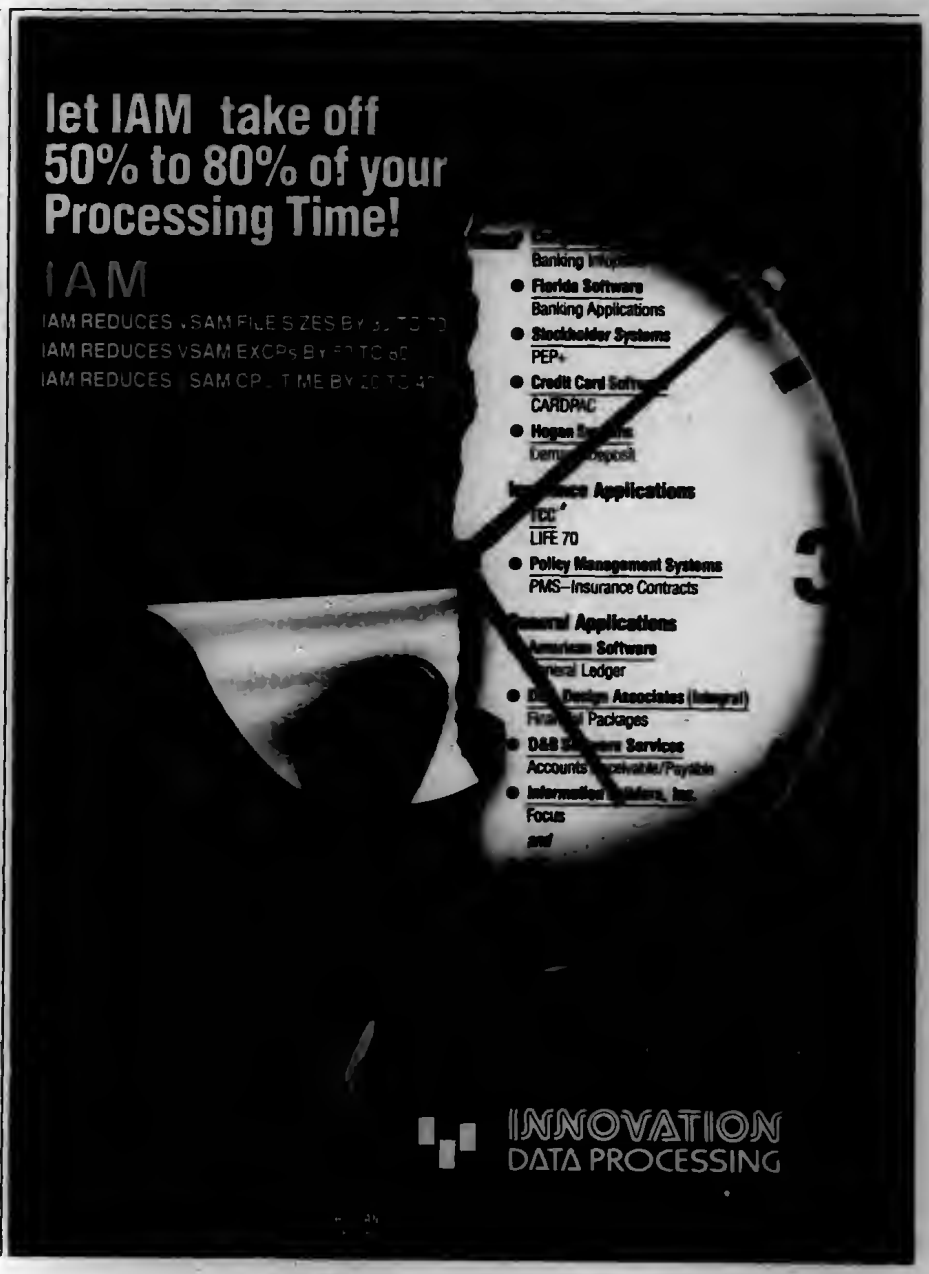
"We'll work with them to give the solution they want, whatever that is," the spokeswoman said.

"There definitely were some general performance and size issues with 1.2 that we've seen some tremendous savings on since we started with 1.3," said Mark Jankowski, director of data services at Frito-Lay, Inc. in Dallas. Frito Lay is in the process of migrating from OS/2 Extended Edition Version 1.2 to Version 1.3.

Despite TCC's dissatisfaction with IBM's overall OS/2 service, Montgomery praised individual IBM representatives for their efforts.

Montgomery said he did not think the project's death was a potential nail in OS/2 Extended Edition's coffin, despite the product's sluggish reception by the market.

"It's hard to say that [this is] a damning indictment of OS/2," Montgomery said, although he added that TCC will continue to use OS/2 as an application development tool.



NEWS SHORTS

Apple has "near final" System 7

The long-awaited next-generation operating system for the Apple Computer, Inc. Macintosh moved a step closer to reality last week when Apple said it is ready to ship a "near final" version of System 7 to 13,000 Macintosh hardware and software developers. Apple said it expects to ship System 7 to users later this year.

Memorex releases midrange disk

Memorex Telex announced its 3936 Disk Storage Subsystem for connection to IBM's Application System/400, 9370 and System/38 midrange systems last week. The Memorex disk offers full compatibility with IBM's 9336 5¼-in. disk, which was introduced last August but is still not shipping in volume. The 3936 also emulates the IBM 9335 14-in. disk, Memorex officials said. The new disk is 40% smaller than its IBM counterpart and sells for $69,000 in a base configuration that stores up to 3.4G bytes of data, Memorex said.

OEMs get OS/2 Version 1.3

Microsoft said it is now shipping OS/2 Version 1.3 to more than 100 OEMs, including Compaq Computer Corp. and NCR Corp. However, Microsoft recommends OS/2 1.3 for "mission-critical and server-based applications," while IBM has been touting its memory savings on the desktop. The Microsoft OS/2 1.3 OEM Adaptation Kit is functionally equivalent to IBM's OS/2 1.3 and includes improved performance for memory constrained environments, reduced memory and disk requirements, better font support, improved printer drivers and a number of other Systems Application Architecture features.

Ross releases Ultrix port

Redwood City, Calif.-based Ross Systems, Inc. announced last week that it has ported its accounting distribution software product line to Digital Equipment Corp.'s Ultrix. The Renaissance Open Series product line, due out in June, includes everything in Ross's VMS accounting distribution software line except the human resources package, which is due out later in the year, according to Ross Chairman Dennis Voha. Pricing starts at $16,000 per module, he said.

HDS disks shipping in volume

Hitachi Data Systems Corp. (HDS) said last week it has resolved some engineering problems that cropped up during an early support program for its HDS 7390 disk drive. The IBM 3390-compatible drives are now shipping in volume, HDS said, adding that customers can expect delivery in 60 to 120 days. While 7390s have officially been in "general availability" since January, customers have reported delays in shipments. HDS said it made minor "engineering changes" in the disk drives' electronic components. These included adjustments to the "gain" of channel signals passing through a disk controller circuit board used for remote maintenance.

Novell profit soars

Novell, Inc. saw its income for the first quarter more than double compared with one year ago. Profit for the quarter ending Jan. 26 rose from $15.1 million last year to $30.4 million this year. Revenue increased from $105.9 million in the first quarter of last year to $134.6 million this year, a 27% boost. Software accounted for 90% of sales in the first quarter, compared with 72% one year ago for the networking vendor.

Unisys wins piece of HUD deal

Unisys Corp. has moved in as part of Martin Marietta Information System's recent $526 million, multiyear outsourcing contract with the U.S. Department of Housing and Urban Development (HUD). The deal calls for Unisys to provide multiple 2200/622 mainframes and 1100 series mainframes as well as Unisys U 6000 Unix-based minicomputers to Martin Marietta data centers supporting the HUD applications.

More news shorts on page 84

Digital Research hopes to exploit MS-DOS gaps

BY PATRICIA KEEFE
CW STAFF

After years of laboring in the shadow of Microsoft Corp.'s MS-DOS operating system, Digital Research, Inc. (DRI) has launched an aggressive promotional assault designed to spur corporatewide defections to its DR DOS alternative.

During the next 90 days, users can upgrade to DR DOS Version 5.0 for $79; it normally sells for between $120 and $199. Gold Disk licensees will pay $59 or $69 per user. MS-DOS retails for $99.

Early reports from converts, mostly front-line managers and programmers who have tested DR DOS against Quarterdeck Office Systems' QEMM and beta-test copies of Microsoft's DOS 5.0, indicated that DR DOS is technically superior — particularly in memory-constrained, networked environments.

Better memory management, coupled with the ability to install drivers in high memory, has won over at least one large account, a major U.S. government financial agency. Rick Seymour, chief of electronic data processing, said the agency, which he requested not be identified, has already installed DR DOS on 4,000 machines and will boost that number to 14,500 by April.

While DR DOS has won over some engineers and technical gurus, its progress has been stalled by lengthy product evaluations.

DRI "shot itself in the foot" by not shipping DR DOS at $99 in the first place, said Bjorn Billings, Pan American World Airways' data center manager of microprocessing.

Searching for approval

Both the company and its supporters conceded that DRI faces an uphill battle getting DR DOS on corporate "approved lists."

DR DOS allows users to load both the DOS kernel and network drivers in high memory, freeing up at least 50K bytes. Users said it also provides better file management and task switching, a friendlier interface, fewer maintenance headaches and built-in utilities that can save as much as $300. For example, a built-in link eases data transfer.

Conversely, one user dismissed MS-DOS 5.0 as a minor upgrade. "I'm not impressed," he said. He added that a fellow beta tester gets 8K fewer bytes of memory under DOS 5.0 than under DR DOS. Still other users said DR DOS has proven to be more stable running Windows than DOS 4.01 or 5.0.

More damning are charges that DOS 5.0 will force rewrites of communications packages. "By the time you buy DOS 5.0 and connectivity upgrades, you'll easily be up to $200," said a systems analyst at a Fortune 100 company. DR DOS, meanwhile, picks up kudos for its compatibility with DOS and networking applications.

Memory gains have ranged from 50K to 120K bytes, depending on configuration.

The New York State Health Department's Division of Health Care Financing is trying to downsize a mainframe application to personal computers. The need for large spreadsheets, network drivers and other memory-resident programs outstripped MS-DOS' memory, forcing the health agency to switch to DR DOS.

However, technical superiority isn't everything. "It was a problem bringing [DR DOS] in," acknowledged Ron Kosar, office automation development manager for the Aero & Naval Groups at Martin Marietta Corp. The reigning attitude, he said, was that "if it doesn't have 'Microsoft' on the front, it wasn't any good."

User needs, coupled with experience, are said to be keys to winning over leery department and information systems managers. It has brought skeptics around at Martin Marietta, where engineers in particular love the package, according to Kosar. He has 200 licenses, 70 of which are in use.

Bellcore speeds time with laser clock

BY GARY H. ANTHES
CW STAFF

LIVINGSTON, N.J. — Bellcore said last week it has developed an ultraprecise laser-based clock that could boost the speed of high-performance computers up to 10 times.

Bellcore said its clock, which is the size of a grain of sand, can work at up to 8 GHz. Quartz clocks in today's supercomputers tick every billionth of a second or so, effectively limiting the number of instructions performed each second to that rate.

Ken Young, a district research manager, said the technology may find commercial applications within five years. Companies could license the technology from Bellcore or build their own clocks.

One of the first commercial uses may be in computers from Supercomputing Systems, Inc., the firm started by ex-Cray Research, Inc. supercomputer designer Steve Chen. Chen's firm and Bellcore are jointly conducting research on the techniques underlying the Bellcore invention, Young said.

Industry analyst Gary Smaby said there is speculation that Supercomputing Systems will bring out a 32-processor prototype by the end of next year. He also said the firm has lined up three "investor/customers": Du Pont Co., Ford Motor Co. and The Boeing Co.

Bellcore attached the laser to a "star coupler" that splits the emitted light into 1,024 laser beams, each of which can then be sent down an optical fiber to control a processor or other device on a circuit board.

Bellcore laser, *no bigger than the pupil in Washington's eye on a one dollar bill, may solve computer synchronization problems*

The accuracy of the timing signal stays true to 12 trillionths of a second over all 1,024 circuit boards, Bellcore said. Conventional clocks are subject to about 10 times that much variation, requiring that their processors run at slower speeds in order to mask the random fluctuations in frequency, called "jitter."

According to Young, Bellcore's owners, the regional Bell telephone companies, may be able to use the clock in new high-speed switches.

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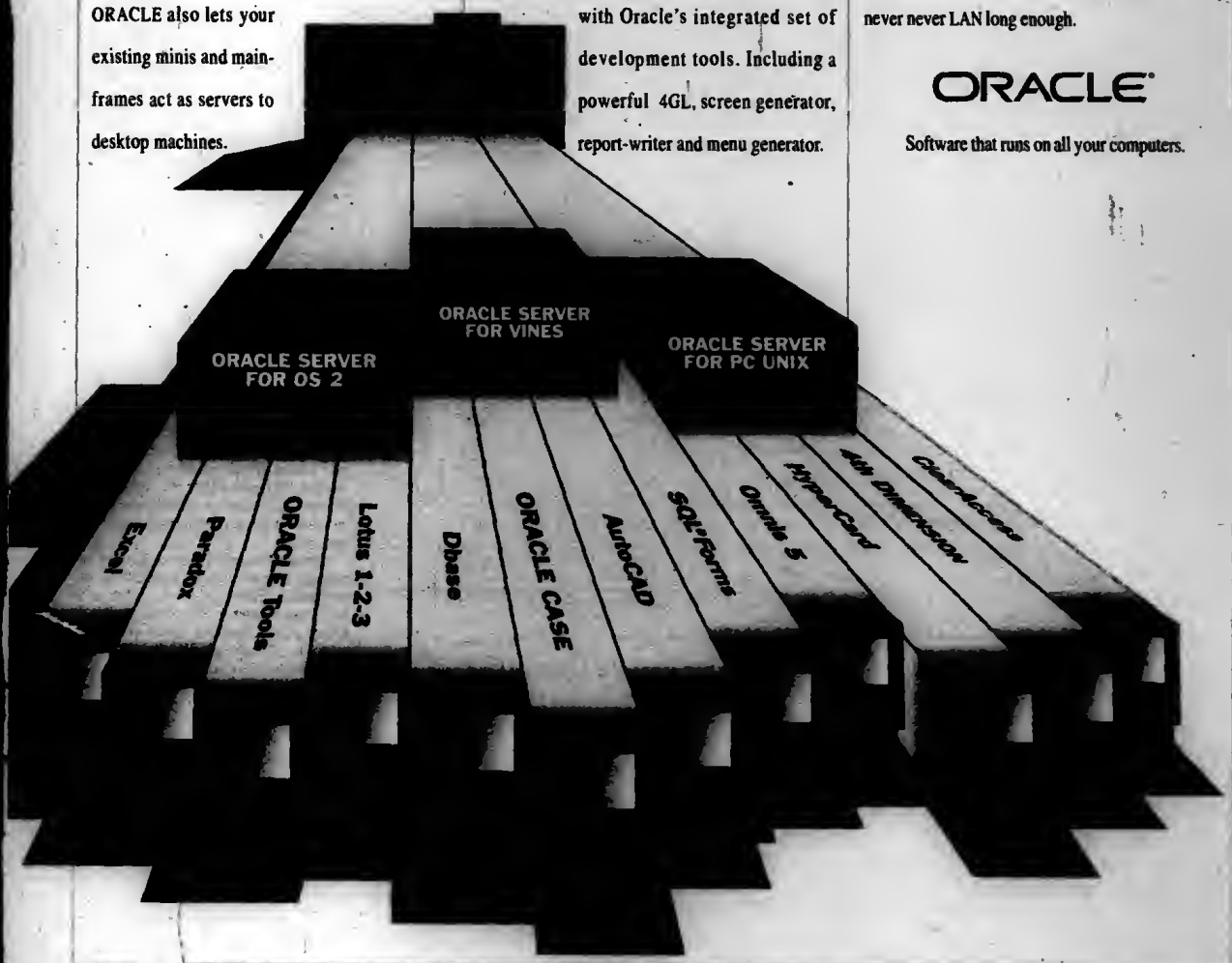

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Response to SQLwindows for Btrieve divided

BY JIM NASH
CW STAFF

REDWOOD CITY, Calif. — Observers saw as many questions as answers coming from last week's Gupta Technologies, Inc. SQLwindows for Btrieve announcement. The Menlo Park, Calif.-based database front-end and gateway developer said it would begin shipment of the tool this week.

With SQLwindows, Gupta's front-end development package, programmers can create and alter Microsoft Corp.'s Windows 3.0-based applications for Novell, Inc.'s Btrieve record management Netware Loadable Module (NLM). Last year, Provo, Utah-based Novell purchased a 19% interest in Gupta. This is the first product to come from the relationship.

Rich Finkelstein, a partner at Chicago-based consulting firm Performance Computing, said development for both Windows and NLMs can be risky. Both are unprotected environments, Finkelstein said, allowing one application to infringe on another and destroy it.

SQLwindows is a credible tool for developing Windows applications that access Btrieve, he explained, but the lack of protection in Windows and Btrieve is likely to scare off some potential users. Speaking last week at a press and analysts briefing, Gupta President and Chief Executive Officer Umang Gupta said there are 18,000 registered Btrieve developers.

One developer for Btrieve, whose firm has served as a beta-test site for SQLwindows for Btrieve since last March, said he has been satisfied with its performance. Bill Radford, a principal at Radford Associates, a Lyndhurst, N.J., developer of human resources software, said he has had no complaints with Btrieve on his file servers. The product, Radford said, offers a graphical user interface that prevents him from having to write his own.

Another beta test user of SQLwindows for Btrieve, Don Awalt, president of RDA Consultants Ltd. in Hunt Valley, Md., said the product quadrupled software productivity for the company over Cobol applications development.

At last week's briefing, some questioned the wisdom of Novell and Gupta, two companies with competing database engines, working so closely together. How will they reconcile Btrieve sales with Gupta's SQLbase sales?, asked Mike Heylin, an analyst at Creative Strategies Research International, Inc. in Santa Clara, Calif. A Gupta spokesman said the two would coexist, each being sold on its own merits. A Novell spokeswoman said only a detailed examination of each engine would reveal advantages of either.

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Automatic distribution of product upgrades	YES	NO	NO
Benchmark compile-and-link speed[c]	25 sec. (3 times faster)	1 min. 14 sec.	1 min. 14 sec.
Benchmark execution speed[c]	6 min. 11.4 sec. (4.3 times faster)	18 min. 17.2 sec.	18 min. 17.2 sec.
Benchmark executable file size[c]	104,713 bytes (2.6 times smaller)	282,288 bytes	282,288 bytes
Benchmark source available for review[c]	YES	N/A	N/A
DOS memory extender included	YES	NO	YES
No-charge run-time for DOS memory extender	YES	NO	NO
No-charge support for both EBCDIC and ASCII under CICS and IMS	YES	NO	YES
Dynamic Link Library (.DLL format) support under DOS as well as OS/2	YES	NO	NO
Dialect support for IBM VS COBOL, VS COBOL II, ANSI-74, ANSI-85, etc.	YES	YES	YES

a. Both are Micro Focus products. Company and product names are registered trademarks of their respective holders. Product information was current as of 12/5/90
b. The COBOL/2 list price is $900. To get the editor it's necessary to pay a $45 postage and handling charge.
c. This benchmark was created by Realia to test the competing compilers. Different benchmarks can lead to different results: the best benchmark is your own application.

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Attachmate buys up 3Com OS operations

BY JIM NASH
CW STAFF

SANTA CLARA, Calif. — 3Com Corp. continued its divestiture of network operating system operations last week with the sale of its IBM Systems Network Architecture (SNA) gateway product, newsletter and seminar operations to Attachmate Corp. in Bellevue, Wash.

The sale consisted of virtually everything 3Com picked up in 1988 with its purchase of Communications Solutions and Information (CSI). It is the latest in a series of steps back from network operating systems taken by 3Com [CW, Dec. 17, 1990]. Terms of the agreement have not been disclosed.

A spokesman for Attachmate said last week that the purchase was aimed more at building a strong consulting arm for the company than continuing the division's Maxess SNA gateway.

Maxess support continues

Attachmate will continue to sell, service and support Maxess gateways, which began shipping last year. Attachmate has said a new version of Maxess is in the pipeline, but added that this version will be the last. No further enhancements will be made to the product, according to the spokesman.

Financial carrots will be dangled to encourage Maxess users to switch to Attachmate's Extra gateways. Extra is a DOS-based gateway. The spokesman said Attachmate is working on an OS/2 version, but he could not say when the product would be released.

This is troubling news for 3Com users who enjoyed having 3Com products that hove closely to Microsoft Corp.'s LAN Manager. According to Bill Birckhead, leader of a 3Com user group based in New Jersey, users had been looking forward to greater security, naming conventions and other features from LAN Manager. Most of 3Com's networking products and divisions have been licensed to Microsoft.

Birckhead said users needing SNA gateways had hoped whoever bought the CSI department from 3Com would tie new development to LAN Manager enhancements.

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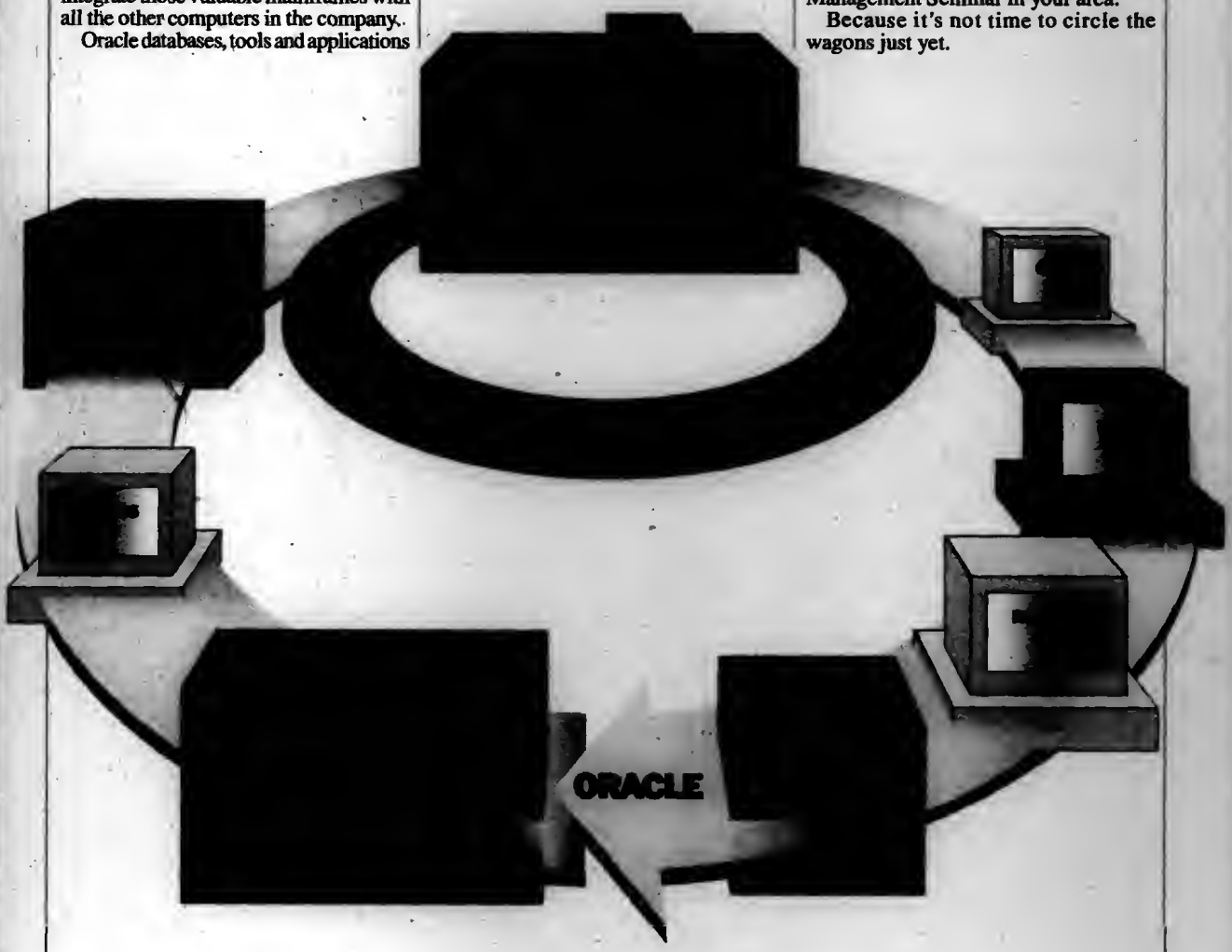

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NASD gets fail-safe network

MCI to provide stock market security and disaster recovery

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — MCI Communications Corp. said last week it will set up and manage a nationwide data network to provide security and disaster recovery for users of over-the-counter stock market information from the National Association of Securities Dealers (NASD).

Information about trades, prices and volume will be broadcast from NASD's data center in Trumbull, Conn., to more than 80 subscribers and vendors, such as Quotron Systems, Inc., who in turn distribute the data to 170,000 terminals at brokers' offices and elsewhere throughout the world. The data will move over an MCI digital backbone to eight access points throughout the U.S., where subscribers will tie in via leased lines.

In addition to the broadcast data, the network will carry information from market makers in NASDAQ stocks to Trumbull. Market makers are required to report their trades within 90 seconds.

"Disaster recovery was the main impetus for this," said Doug Moore, associate director of network planning and operations at NASD. Under the current scheme, subscribers have arranged for their own dedicated lines to the Trumbull data center.

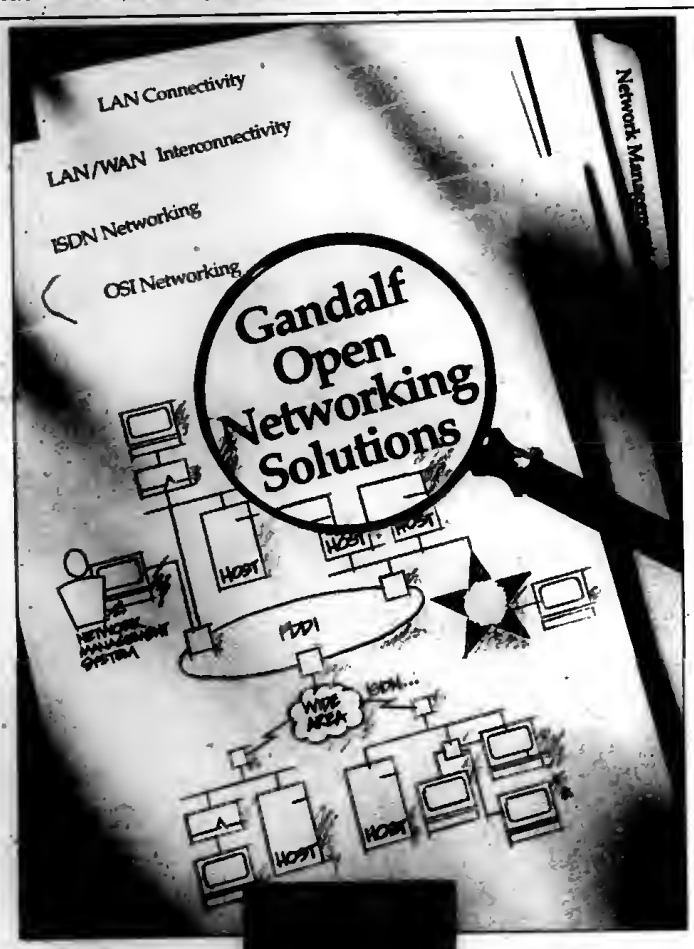
The cost of those lines has prevented most subscribers from also leasing lines to NASD's backup computer hot site in Rockville, Md., leaving them unprotected in case of an outage at the Trumbull data center.

With the new network, if the Trumbull site goes down, NASD will direct MCI to route traffic to Rockville. Similarly, if MCI's ring-shaped network is broken, MCI will automatically route traffic over another path.

Subscribers will pay no more — and many will pay less — than they are currently paying for communications, Moore said. Those at considerable distances from Trumbull will pay as much as 50% less, he said, because the backbone cost is shared with other users while the cost of a separate link to Rockville can be avoided entirely.

An estimated $10 million over the life of the five-year contract will be paid by NASD members, brokers and data vendors that use the network, Moore said. MCI will be subscribers' single point of contact for installation, modem equipment, billing and trouble reporting.

The nationwide network is scheduled to be in operation by August. Access points will be located in Trumbull, Rockville, New York, Chicago, St. Louis and San Francisco.



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Sybase cuts out SQL middleman

BY JEAN S. BOZMAN
CW STAFF

EMERYVILLE, Calif. — Sybase, Inc. said last week that it will cut out the middleman in the link between personal computer-based applications and Sybase relational database management systems running on Unix and Digital Equipment Corp. VAX computers.

The company announced PC Net-Library, which eliminates the need to use the Sybase/Microsoft Corp. SQL Server as a database gateway on an OS/2 local-area network. This could save users the $2,500 cost of OS/2 SQL Server and increase the number of supported network protocols from one to more than 20.

SQL Server is also a full release behind the current Sybase 4.0 RDBMS running on Unix and VAX machines. For $145 per interface, PC users can now load the PC Net-Library modules of their choice and directly connect with remote Unix and VAX servers outside their LAN.

Scads of support

Sybase's PC Net-Library of software modules works with SQL Server's DB Lib 1.1 utility, which is supported by scores of independent software applications suppliers. The 20 new protocols in PC Net-Library add support for Transmission Control Protocol/Internet Protocol, DEC's Decnet, Microsoft's LAN Manager, IBM's LAN Server, Novell, Inc.'s Netware and AT&T's Stargroup, among others.

Some Sybase users questioned last week said they believe the new product will bring PCs closer to the enterprisewide network and its corporate databases. "This product gives us more reasons to migrate our stand-alone Personal System/2s and Compaqs into our networked database applications," said George Reid, information systems director at Sanford C. Bernstein and Co., a New York investment brokerage firm that uses the Sybase RDBMS on multiple VAX systems.

"We can use data on the SQL Servers we already have and deliver a database environment to our PC community for the price of some extra disks," Reid added.

Microsoft and Sybase have agreed to share software support duties with a network of third-party vendors through Sybase's Synergy maintenance program.

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Amdahl sets Escon date

BY JEAN S. BOZMAN
CW STAFF

SUNNYVALE, Calif. — Amdahl Corp. said last week that it will match the IBM Enterprise System/9000's Escon fiber-optic channel features on its 5990 and 5995 mainframes in the second quarter of 1992, about two months later than analysts had expected.

Amdahl had promised support for Escon when the 5990 and 5995 were announced last September.

"There's no question that Amdahl's Escon support is coming on the far end of the range that customers expected," said Frank Gens, vice president of technology assessment at Technology Investment Strategies Corp. in Framingham, Mass. "Amdahl had been saying earlier that it would deliver Escon support within 12 to 18 months of IBM's delivery."

Various models shipped

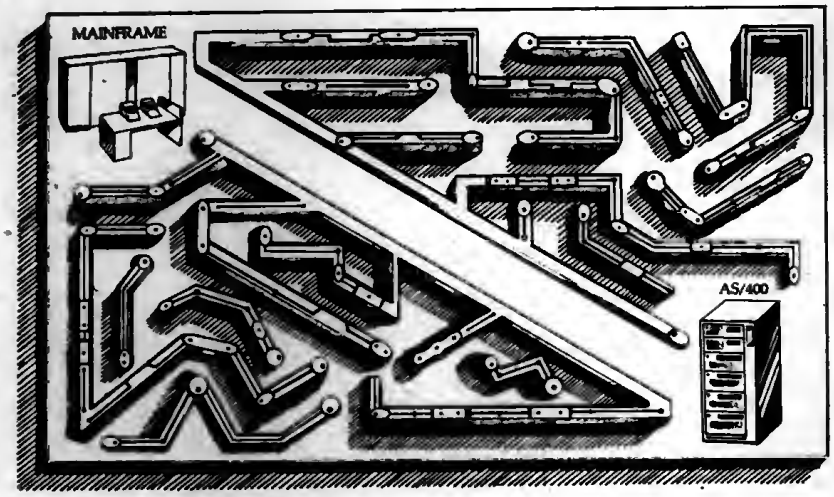
IBM began shipping the Escon feature shortly after the ES/9000 introduction in September and accelerated shipments in November, Gens said. Amdahl plans to ship three- and four-way models of its answer to the ES/9000, Amdahl 5995M mainframes, in the fourth quarter of 1991; six- and eight-way models of the 5995M will follow in the second quarter of 1992.

However, support for IBM's Escon Converter will come in the fourth quarter of this year for Amdahl's 6100 disk drive controller, the firm said. In practical terms, Amdahl customers who own IBM machines will then be able to use IBM's Escon Converters with their Amdahl disk drives, bypassing the Amdahl CPUs and linking Amdahl and IBM systems.

"At that point, the motivation to get Escon out the door quickly is not as great," said John Jones, a senior analyst at Montgomery Securities in San Francisco. The Escon converters link older bus-and-tag cables with the Escon fiber channels.

Amdahl will match other new IBM ES/9000 features, including IBM's Sysplex clustering architecture, the Sysplex Timer and the Cross-System Coupling Facility, in the third quarter of 1992 on Amdahl 5995M models and in the fourth quarter on Amdahl 5990 and 5995A models.

The lag in Escon support may not be a concern for Amdahl sites, some users said. "It would be nice if Amdahl could ship that kind of feature closer to the time IBM ships it," said an information systems planner at a large West Coast site that teams IBM and Amdahl mainframes. "But we think we're going to slowly transition to Escon since that move has to be coordinated with other sites around the country."



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Two charged in plot to push hot PCs on Exchange

BY RICHARD PASTORE
CW STAFF

BOSTON — The Boston Computer Exchange, the country's first and largest used personal computer reseller, was used as an unwitting fence for thousands of dollars worth of stolen PC equipment, Exchange executives said last week.

Exchange records show that two Massachusetts residents used the brokerage to conduct approximately 75 PC hardware transactions. The transactions included about $20,000 worth of equipment identified as stolen from sites around New England, particularly colleges and schools.

According to the State Attorney General's Office, a warrant has been issued for the arrest of Carl Reid on charges of receiving stolen property. Louis Jatta of Waltham, Mass., was arrested on the same charge, posted bail and then fled. Both men are still at large.

A crack in the system

The stolen goods slipped through the Exchange's safety net, which involved serial numbers and caller identification.

"We were duped," Exchange President Alex Randall said, noting that this was the first such incident that he knows of in the Exchange's nine years of operation.

The brokerage has since tightened controls, which Randall declined to describe for security reasons. The Exchange has offered to reimburse all customers who purchased the stolen equipment.

The real problem facing secondary market resellers is the lack of ownership records, Randall emphasized. He is proposing to industry manufacturers and associations that a central recording facility be established to maintain original owner names and serial numbers. The information would be available by telephone and could be checked before any after-market transactions are made.

"I see this case as an opportunity to make poignant to the industry the seriousness of this problem," Randall said. If measures to ensure ownership integrity are not taken, "PCs could become the car radios of the 1990s."

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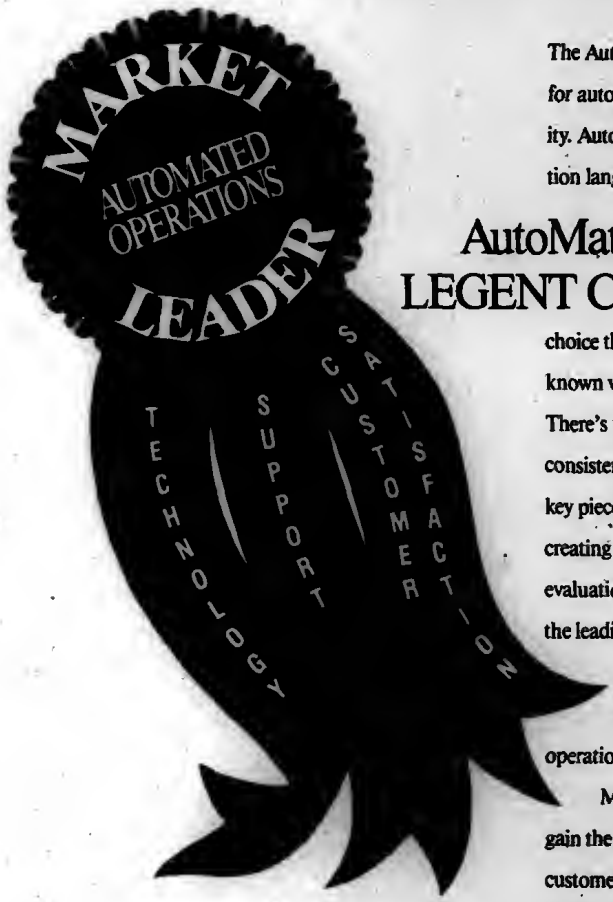

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*Gartner Group's *Software Management Strategies*, P-480-866, "LEGENT's ASO Products Take the Lead," 8/29/90.

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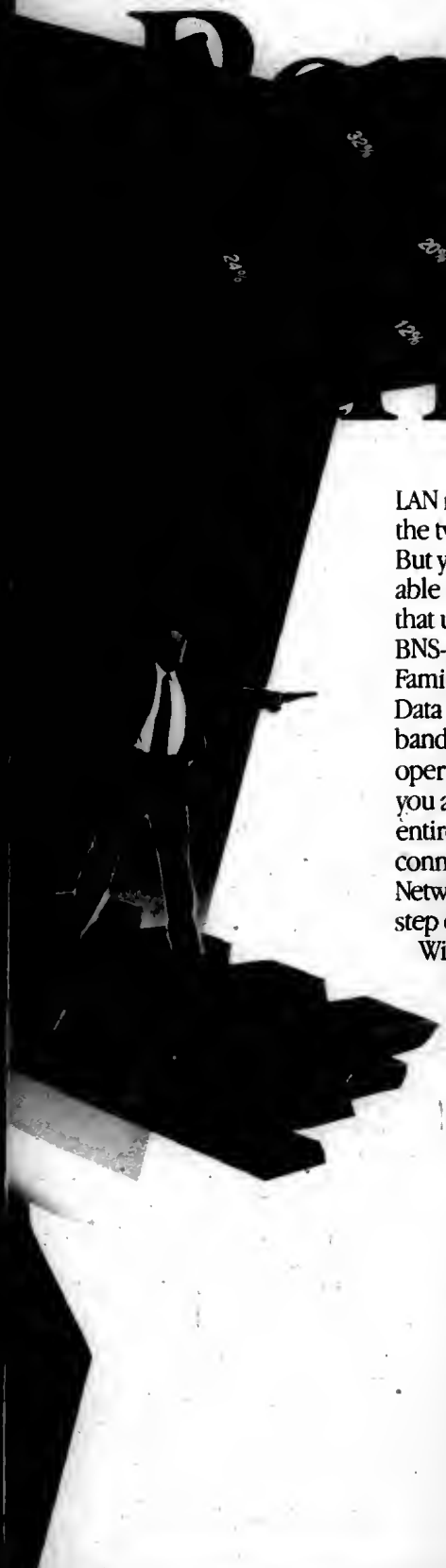

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TECH TALK

Parallel computing action

■ The Northeast Parallel Architectures Center at Syracuse University has launched a program to bring parallel computing technology to businesses in the state of New York. The program, called Advanced Computing Technology as an Innovative Opportunity Now (ACTION), offers training, education and development programs in computational science — the hybrid field of applying computers to scientific and industrial applications. ACTION team members will assist corporate researchers in electronics, transportation, manufacturing and other fields in identifying applications suited to parallel computing. The team will also develop customized software tools and applications for industrial applications.

Powerful in Pittsburgh

■ The Pittsburgh Supercomputing Center has linked two supercomputers of radically different design and successfully distributed an application between the two at data rates approaching 1G bit/sec. Linking the two computers — a Thinking Machines Corp. Connection Machine and a Cray Research, Inc. Cray Y-MP — allows scientists to distribute tasks according to what each does best, creating one of the most powerful computing environments ever, according to scientists at the Pittsburgh center. The high-speed data transfer was accomplished with a High-Performance Parallel Interface, an industry standard developed at Los Alamos National Laboratory. "This is a critical step for supercomputing," said John Mucci, vice president for research at Thinking Machines. "This kind of application-based collaboration will allow the computational science to address a whole new class of supercomputing tasks." The Pittsburgh center is a joint project of Carnegie Mellon University, The University of Pittsburgh and Westinghouse Electric Corp.

Looking ahead to the next century

Future technology will be discussed at an upcoming conference in San Antonio

BY MICHAEL ALEXANDER
CW STAFF

Are you ready for the 21st century? That is the question that will confront some 2,000 computer scientists convening in San Antonio this week for the Association for Computing Machinery's 19th annual Computer Science Conference. The scientists are slated to discuss emerging technologies as well as ways to prepare for the coming century.

Keynote speakers are scheduled to deliver talks on research trends in four key areas: global networks, improved workstations, parallel computing and memory programming. Following is a preview of what they plan to say based on interviews conducted last week.

Marie Hansen

Global networks

Craig Fields, president of Microelectronics and Computer Technology Corp. in Austin, Texas, said he foresees an explosion in global digital networking and distributed computing driven by changes in telecommunications regulation and fiber optics, among other technologies.

Some characteristics of this global infrastructure include user-friendly interfaces; commonplace use of artificial intelligence; security privacy; and trust for protection from intrusion, multinational capabilities, scalability and customization, Fields said.

"It will be transparent, seamless, high-capacity — up to gigabytes per second between fixed sites — and ubiquitous, sustaining a large number of portables and mobile subscribers with increased availability of spectrum and digital signal processing," he predicted.

The network will be routinely used to transmit not only text and speech but also images, video and other permutations of multimedia, Fields said. "The raw data rate will be a few gigabytes, although the on and off ramps might slow you down. That will occur in the mid- to late '90s.

"The intelligent network, or global network, will become integral to the way we do business and even the way we live our lives," Fields said. "It will reach not only businesses, government and schools but homes as well."

Improved workstations

"I would say by the mid-'90s, we are easily going to have workstations capable of 100 plus [millions of instructions per second] and are likely to have photorealistic, three-dimensional visualization capability and interfaces to create a virtual reality presence," said Phil D. Hester, director at IBM's Advanced Workstation Division Engineering Center in Austin. Hester is responsible for the development of IBM's reduced instruction set computing hardware.

"It is also very clear we'll have large amounts of real memory to do computing on a real-time basis," Hester said.

"It would not surprise me to see well in excess of 128M bytes as typical, particularly at the high end. To play back in real time a series of interactions, we'll need more than 32 bits of addressing, and we'll have applications with more than 4G bytes of addressability. At some point in the 1990s, we'll start to see 64-bit systems show up," Hester added.

Industrial, electrical and other forms of design have reached the end of a progression that began with a paper and pencil and ended with computers capable of realistic simulations, according to Hester.

"Now you can simulate a bridge, for example, inside a workstation and do all sorts of optimizations," Hester said. It is no longer necessary to build models before actually building the product, he added.

"The question is, what happens next?" Hester said. "Now we start getting into interaction with design through virtual reality. We're not really doing interactive modeling of how a person will deal with objects. We'll extend into 3-D space and insert the self into a reality that is simulated onscreen."

Parallel computing

Parallel processing will move out of research centers and into the mainstream, assuming that certain conditions are met, according to H.T. Kung, a professor of computer science at Carnegie Mellon University and a leading researcher in parallel computing.

"One, we need to have a more widespread model of parallel computing to allow for the development of software tools that could be used to create applications for a variety of parallel machines instead of specialized applications for each machine," Kung said.

"The second point is to improve interprocessor support," Kung said. The goal should be to develop ways to link parallel processors not only to each other but also to processors in sequential computers.

"This trend is clear: [Intel Corp.'s] 1486 and 586 and Motorola, Inc.'s processors will have better support for parallel computing so that you can piggyback on mainstream architecture investment," Kung noted.

The third condition that must be met is to increase the use of parallel processing machines in general environments, Kung said.

"We need a network that supports a variety of applications, including business. It is very hard for one parallel machine to handle all kinds of applications, so it must be paired with other general machines, each one doing what it does best. The bottom-line way to do that is a network," Kung said.

Memory programming

"I have been thinking about a programming language that I call Elephant 2000," said John McCarthy, a professor of computer science at Stanford University.

McCarthy is a pioneer in the study of AI and is credited with having coined the term artificial intelligence in 1955 and inventing the LISP programming language in 1958, among other accomplishments.

"Elephant 2000 is associated with a language that communicates in a significant way with people or programs," McCarthy said. The term was derived partly from the adage that an elephant never forgets and from a line in a children's rhyme that says an "an elephant is faithful 100%," he added.

"Consider a computer program that communicates with people or other computer programs, and suppose that these programs belong to different organizations and have to communicate commercial matters like buying and selling," McCarthy said. "For a program to be able to do this, it must be capable of understanding sentences that go beyond those that are simply true or false."

The program must be able to understand other kinds of sentences: assertions, questions, requests, permissions and so forth, McCarthy said.

"You want it to perform these 'speech acts' correctly. If it makes a promise, it fulfills a promise. When a priest says, 'I now pronounce you man and wife,' he is not merely stating an opinion but is also creating the fact that he is doing that," McCarthy explained.

For example, the Elephant 2000 language could be used to design a business program that could be used to accept orders for widgets and automatically arrange for the products to be delivered, according to McCarthy.

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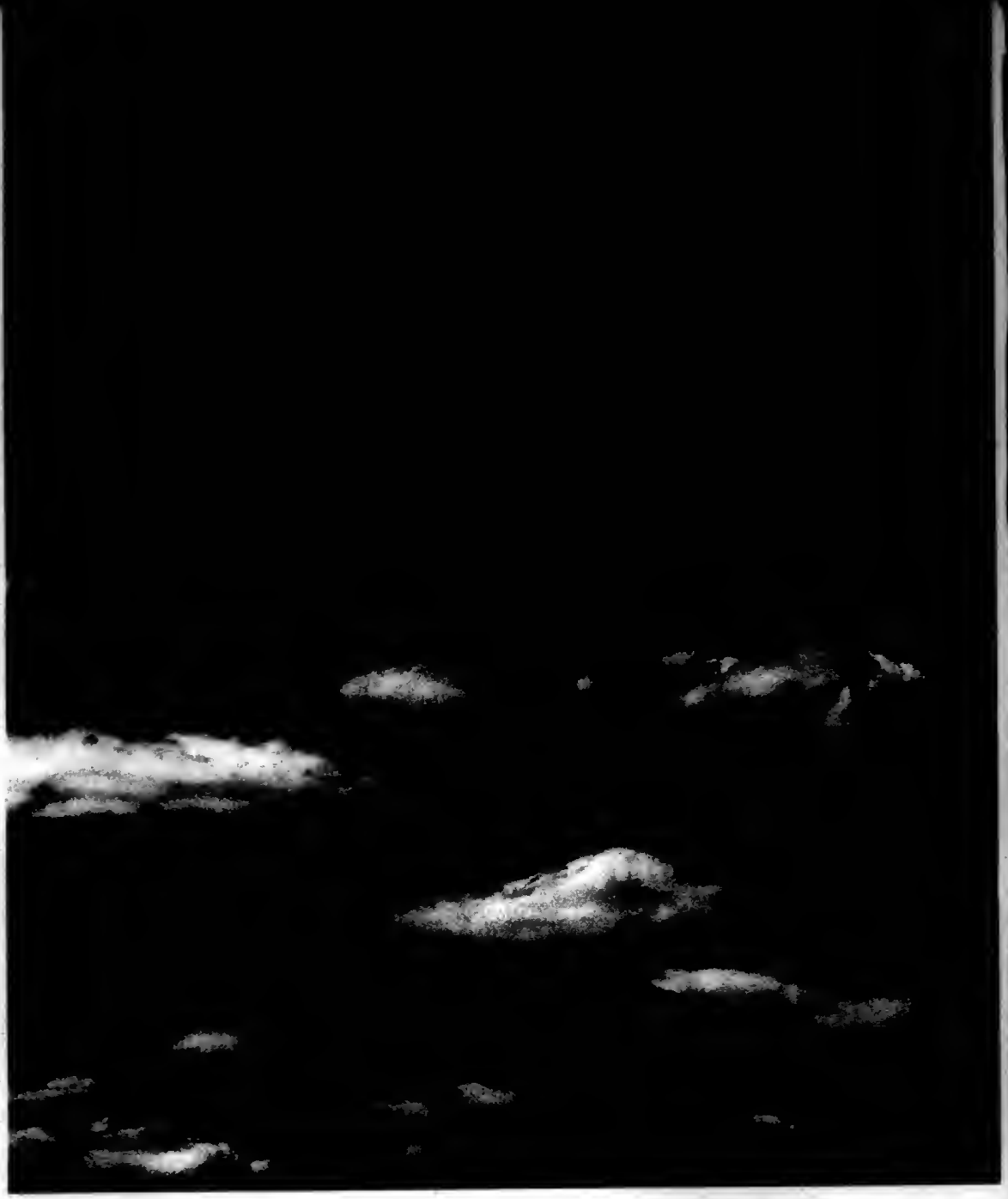

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EDITORIAL

Revolving doors

While recessions and wars come and go, and business fortunes accordingly ebb and flow, one fact of corporate life has remained naggingly consistent: namely, the high turnover of senior information systems executives.

There are no precise turn-over metrics, but estimates of top-job seat changing in the IS suite range as high as 25% annually, with some of the brightest luminaries among those on the move.

Why do the mighty continue to fall or at least move around so much?

The answer will certainly vary from case to case and from company to company, but a recurrent theme has to be connected with the perception at the top of the company that IS hasn't fulfilled its main mission. In recent years, that has been the promise of linking IS strategy more closely with the corporate strategy, thereby creating the elusive grail of competitive advantage.

Have IS strategies failed in large measure? Or have those strategies and the people who hatched them become scapegoats for miscast corporate plans?

The answer, most likely, is somewhere in between these extremes. And while IS management can't do a heck of a lot to rectify senior corporate miscues, consider the hard lesson learned by IS at a large, Connecticut-based insurer.

Two years ago, central IS was put in charge of building a financial management system in one of the largest business units. The corporate directive was to "empower" the unit with a system planned and implemented by IS, but the system would also have to be largely turnkey in nature, with the business unit closely assisting in the design requirements.

Squabbling broke out between the unit and a control-seeking IS department. The project fell hopelessly behind schedule and over budget. Guess who got moved aside?

The company then appointed a non-IS manager to take over the project. The manager had the novel idea of creating a task force comprising business unit and corporate staff members and selected IS consultants as well as an outside consultant.

Today, the project is well on its way toward completion, and the manager is looking to step aside and relinquish control to another IS professional — but one who has greater respect for and understanding of the primacy of the business unit.

So ultimately, the fall of IS in this case had little to do with a failed systems investment or an inherent inability to link that investment to some sort of competitive advantage — at least not directly. The problem was much more fundamental, and fixing it required a clear understanding of the rapidly changing nature of business structures. To quote an old proverb, "The lightning said to the oak tree, 'Stand aside, or take what's coming at you.' "

LETTERS TO THE EDITOR

Don't have a cow

I was quite interested in your news short in the Feb. 11 issue about the deceased cow who "udderly destroyed" the AT&T link in Alabama when a farmer attempted to bury her in a pasture over a fiber-optic cable.

My manager was sad to hear the plight of the cow and was "deeply mooed." But our president thought that it was a "bunch of bull" and that it was the silliest story he'd ever herd. But knowing how you steak your reputation on the facts, you won't get any beef from me.

Hal S. Crawford
Systems Engineer
Modems Plus
Atlanta, Ga.

Filling a niche

Regarding "No software solution is an island," by Charles Wang [CW, Jan. 21], the majority of the piece consisted of unsubstantiated statements and generalizations.

While Wang is correct that we need "carefully designed frameworks and industry standards," this does not force the conclusion that all software using these must come from one vendor.

• Historically, innovation has come primarily from individuals and small companies. Wang states that "it is the same single-product software vendors that fall increasingly short in providing comprehensive solutions." Who asked them to?

• Monolithic vendors such as Computer Associates seem to think more about their bottom lines than about the services they provide. A result is the general neglect of niche products and products for niche industries by the larger vendors.

• If there are any savings because of scale, they are not passed on to the customers. In practice, larger vendors have larger overhead, and it is the smaller supplier who delivers better cost effectiveness.

Gerhard Postpischil
President
Expert System Programming, Inc.
Vienna, Va.

Blaming the victim

Who's the real villain?

IBM Credit Corp., in its suit against Comdisco, Cambex and EMC, states that we are all engaged in the practice of taking ICC's property. In other words, IBM is trying to convince the world that it has been robbed. Furthermore, it is trying to identify the robber: "The Third-Party Gang." Somehow, I simply cannot visualize IBM in the role of victim.

At the termination of a lease, IBM takes possession of its equipment in the exact same configuration in which it was originally delivered. As a matter of practice, IBM provides continous service for these systems, whether or not the configuration has been altered.

IBM also "recertifies" the equipment immediately after the upgrade and after the restoration. ICC also allows its leased equipment to be maintained by third-party maintenance companies, which routinely replace worn-out or defective parts with other equipment.

The above is a long-standing industry practice that, in fact, helped give birth to the leasing industry. Now that IBM has become the dominant lessor, they want to change the rules to suit their requirements.

Yes, a theft has been committed: the theft of the right of any company that does business with IBM to make a sound, reasoned business decision in its own best interests.

Richard J. Egan
Chairman and
Chief Executive Officer
EMC²

Optimum capacity

Having read Tony Baer's article "How to schedule in unexpected events" [CW, Feb. 11], I was very disappointed not to see Capacity Management System from Manufacturing Management Systems (MMS) in Kingwood, Texas, in the top vendor list.

We at Camshaft Machine Co. have been very satisfied users of this finite scheduler since 1986. MMS originally installed it on our System/38 and then migrated it to our AS/400 in 1989. The product is designed as a stand-alone module to be interfaced with a company's manufacturing system. Its capability definitely provides us with a manufacturing competitive advantage.

Gary C. Greenwood
Manager of
Information Systems
Camshaft Machine Co.
Jackson, Mich.

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Beware the fruits of war-tech

U.S. needs to put emphasis on technology for something other than battle

GARY CHAPMAN

The war in the Persian Gulf has demonstrated the extraordinary effectiveness of the U.S.' high-technology arsenal. Pictures of "smart bombs" falling straight down Iraqi smokestacks, of cruise missiles blowing up buildings while leaving adjacent buildings intact and of Patriot missiles destroying hostile Scuds have had a dramatic effect on the country's perception of high-tech weapons. There is, understandably, a feeling of pride and satisfaction among many Americans that U.S. weapons are superior to any in the world.

Of course, we need to be careful about our assessment of the performance of U.S. weapons because for now our only source of information about the weapons used in the war is the military. The Pentagon has a notorious history of putting the best face on its weapons and even of falsifying reports on weapons performance.

But perhaps as important as our weapons' actual performance is the widespread perception of exemplary performance, especially among members of the U.S. Congress. One likely result of the successful use of smart bombs, computer-aided phased array radars, cruise missiles, electronic countermeasures and other high-tech weapons is increased support for such weapons among members of Congress over the long term.

Already, there is talk of stepping up the Strategic Defense Initiative (SDI) or "Star Wars" program, and the Bush administration is pushing hard for more funding for SDI. The B-2 bomber, all but dead in the last Congress, is likely to be resurrected. The Advanced Tactical Fighter, which until now has been the subject of scathing Congressional criticism, will have smoother flying ahead.

There are two important reasons to be concerned about this expected result of the conflict with Iraq. The first is that, as the war in the Gulf demonstrated, weapons proliferation comes back to haunt us. Continued development of advanced weapons technology will inevitably put dangerous tools into the hands of people whose ambitions threaten regional or world security.

Iraq was a lucrative customer for military technology, and many countries, including the U.S., were only too glad to sell Saddam Hussein anything he wanted. Defense industries were sitting on profits made from sales to Iraq, while coalition pilots and soldiers were dying from the weapons Hussein purchased.

The second reason we should be concerned about the long-term impact of the war is that the U.S. has been losing its technological leadership to countries that put their high technology into commercial products instead of weapons. The U.S. apparently needs a war to demonstrate its technological prowess these days, and that's not a credit to our country.

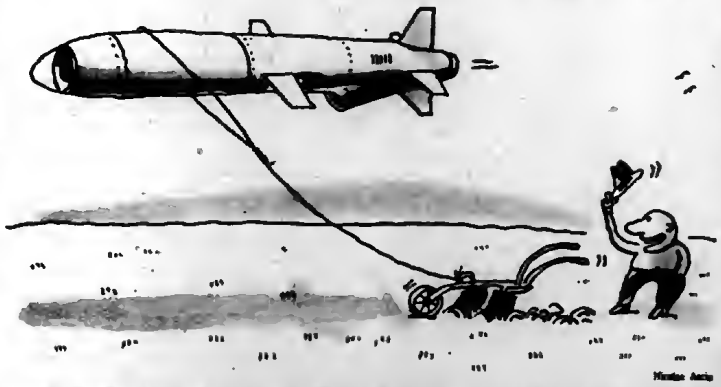
During the 1980s, the Pentagon's share of government support for research and development in computer science climbed to over 60%. At the best schools, such as Stanford, Carnegie Mellon and MIT, departmental budgets were almost entirely funded by the U.S. Department of Defense. Moreover, Pentagon funding became skewed toward applications development and away from basic research. In contrast, Japan's Fifth Generation Project was explicitly cut off from military priorities.

Even though the technology that was showcased in the Gulf war is from the 1970s, the Pentagon and the Bush administration are bragging about the investments made in high tech during the 1980s. The message is clear: To maintain world leadership, the U.S. must continue heavy investments in military technology — especially in computers, telecommunications, software and signal processing.

The U.S. may be able to sustain world military dominance with even higher tech weapons than are being shown on CNN. But world leadership no longer depends on military superiority.

If the U.S. continues to direct so much money, talent and attention toward unproductive military systems, the industrial base of the U.S. economy will continue to wither in the face of foreign competition, and U.S. leadership in all nonmilitary aspects of modern life will vanish. The U.S. will become the greatest military power in history with a ruined economy at home.

The defense industry in the U.S. is basking in glory because of the performance of its products in the Middle East. We should be grateful that our weapons worked, but we should be making plans to stop working on weapons. We should take advantage of the unprecedented multilateralism demonstrated in the handling of the Gulf crisis by shutting down the international arms market once the war is over. And we should take whatever steps are necessary to allow computer scientists and all other talented people in the global weapons industry to work on making the world a more peaceful and productive place.



Chapman is executive director of Computer Professionals for Social Responsibility in Palo Alto, Calif.

Gloomy tales don't tell the computer industry's story

AXEL LEBLOIS

What is wrong with the U.S. computer industry? From a macroeconomic perspective, contrary to popular doom and gloom, not much.

The basic indicators look good. Worldwide information industry sales topped $300 billion in 1990, exhibiting an annual growth rate of more than twice the worldwide economic growth. The information technology business is a bright spot in the worldwide economic picture, and U.S. computer companies are carrying the torch. If there is reason to worry, it is because gloomy economic forecasts are rampant.

Taken in the context of the generally gloomy economic picture, statistics can easily be misinterpreted in ways that produce anxiety about the U.S. market and U.S. vendors. For example, a cursory look at spending might indicate that the Western European market is now growing faster than the U.S. market. Western European growth was indeed higher than in the U.S. last year, a growth that was heavily weighted by the appreciation of Western currencies against the U.S. dollar in the second half of 1990. In local currencies, Western European spending grew 11%; in 1989 dollars it would still have been smaller than the 1990 U.S. market.

Despite the recession, industry profitability remains strong. A sample of 31 leading U.S. firms that reported financial results for each year between 1985 and 1990 shows pretax margins in calendar 1990 were only a little lower than normal and were higher than in 1989.

In addition, the computer industry's importance to the overall economy is growing. Through 1980, the value of computer systems shipments in the U.S. was approximately 5% of overall durable-goods capital expenditures. The wild, early 1980s personal computer growth bumped that figure up to 10%, where it remained last year.

Historically, there is little evidence to prove that the computer industry's performance is tied to the economy. Over the past 26 years, no correlation between changes in economic activity and computer industry growth is apparent.

Why? New technologies and product cycles are far more important energizers for the industry than the GNP. So while the U.S. economy has fallen, the information technology sector keeps growing.

At some point, the industry may become more vulnerable to changes in the general economy. For the moment and for the foreseeable future, however, U.S. information technology suppliers are fundamentally healthy.

Information technology managers are largely carrying on with little regard for the doom and gloom. In International Data Corp.'s recently completed annual survey of information technology users, only 22% reported that their information technology behavior has changed as a result of the "weak economic climate and the instabilities in the Middle East." Internal factors, such as the organization's current performance, were judged to have a far greater effect than the expectations of a recession on budgeting decisions. This was before the Gulf war actually began but was at a time when oil cost $30 per barrel, the stock market was depressed and the economic picture looked at least as gloomy as it does today.

Marketing executives at vendor organizations are generally far more gloomy about the economywide outlook than about their own companies, according to a spot poll taken last month. While 91% saw the economy deteriorating, only 21% felt the same way about their own company. More than 65% felt their company's 1991 performance would surpass 1990 results.

Where does all of that leave us? In pretty good shape, really.

Sure there'll be casualties. The midrange squeeze continues. Minicomputer vendors and retail distributors are getting by on very lean margins. Open systems migration remains perilous at present. The move toward distributed computing is more jitterbug and stutterstep than graceful waltz. The net result, however, is that the U.S. computer industry is in good shape despite well-publicized failures in specific technology areas.

U.S.-based companies still dominate the information technology billion-dollar club. Only two of the $22 billion information technology companies formed within the last 30 years are not U.S.-based. And growth opportunities still abound.

Spectacular failure or pervasive gloom impress easily. At such times, companies must keep a clear, long-term and global perspective.

Leblois is chairman and chief executive officer of market research firm International Data Corp. and is vice chairman of International Data Group, which publishes *Computerworld*.

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Bull torn by market forces

ANALYSIS

BY SALLY CUSACK
CW STAFF

No one needs to be told that times are tough for most proprietary computer hardware companies.

Perhaps Bull HN Information Systems, Inc. has a different challenge than the rest of the pack. The systems vendor has to satisfy an existing customer base consisting of *both* midrange and mainframe customers while planning ways to open up the proprietary GCOS operating system architecture.

To that end, Bull HN, the U.S. operating arm of France's Groupe Bull, has spent the better part of the past 12 months downsizing operations and repositioning product lines in an effort to stabilize its precarious financial situation.

As large- and medium-scale systems sales decline, the company — traditionally identified with its DPS 6 minicomputers and big iron mainframes — has introduced several Unix-based systems and workstations as well as several software applications targeted at vertical markets including state and local government, the legal profession and health care industries.

Longtime Bull HN customers said they were satisfied with the products, upgrade paths and overall maintenance, but they were anxious about the vendor's financial difficulties.

Dale Good, director of information systems at the Minnesota Supreme Court in St. Paul, Minn., said he is pleased with the systems, service and support, but he is concerned about Bull HN's long-term viability.

"It's a trade-off situation," he said. "We could have spent a lot of money going to a different vendor, but then, a lot of other vendors are having money problems right now."

The Minnesota Supreme Court has spent the past year upgrading from the DPS 6 to the more robust 7000 series platform, which can support 4,000 users at the high end.

The presence of an upgrade path was an important factor in the purchase decision, Good said, adding that there are now seven 7000-class machines installed throughout the state's court system, supporting a total of about 1,200 users.

"The key issue is that they are continuing to sell into their existing base, and it is important that they continue to offer high-end customers a growth path," said Stephen Josselyn, a senior analyst at International Data Corp., a Framingham, Mass.-based market research firm.

Shrinking market

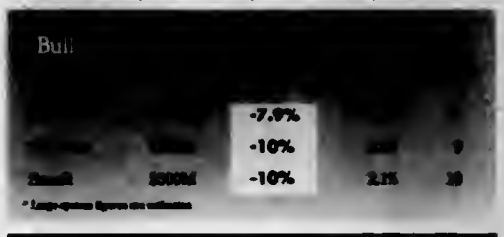
Josselyn said Bull HN's large systems sales were impacted significantly when Digital Equipment Corp. and Tandem Computers, Inc. launched new entries into the mainfame market, cutting an already shrinking pie into even smaller pieces.

Graybar Electric Co. had a Bull 9000/92T under GCOS8 installed at its St. Louis headquarters last June. Graybar, a longtime Bull HN (formerly Honeywell, Inc.) shop, also maintains 19 Bull DPS 6 midrange computers in the field, all of which are linked to the mainframe over an X.25-based network. The main-

Continued on page 28

Down slope

Bull saw its sales slip in three major product areas last year



Source: International Data Corp.

CW Chart: Paul Mack

IBM puts Showcase on display for AS/400

BY MARYFRAN JOHNSON
CW STAFF

IBM recently rolled out the red carpet for Showcase, a cooperative processing tool designed to let users tap directly into an Application System/400 database from a spreadsheet running on an IBM Personal Computer or workstation.

Showcase integrates Microsoft Corp.'s Windows 3.0 and Excel spreadsheet on PCs or Personal System/2s. It can be used to create graphics on the workstation with data stored on the AS/400. Access to the application is as simple as selecting an icon, company officials said.

"A good spreadsheet writer can run a query, go into the spreadsheet, the Showcase macro kicks in and boom, here comes the pie chart from information in the AS/400," said James Louys, vice president of ADM, Inc., an AS/400 consulting firm in Cheshire, Conn.

Developed by Rochester Software Connection, Inc. in Rochester, Minn., Showcase is the brainchild of a group of former IBM executives who started the software firm in 1989. The product has been shipping for about six months and has about 300 users, but IBM only gave its blessing last month and will now sell it directly to customers.

"What these guys are producing are the bells and whistles that IBM has promised its AS/400 customers but hasn't had the time to do itself," said Teresa Elms, president of Elms Information Services Group in San Diego.

Elms said PC users who need access to AS/400 data appreciate the way Showcase masks the midrange machine's complex operating system. "This lets you use the Excel spreadsheet to manipulate data on the PC and the AS/400 in a completely seamless way," she noted.

Off and running

One new user is Nike Shoes, Inc. in Beaverton, Ore., where the Excel spreadsheet has been a company standard for years. Nike is exploring the use of Showcase to build decision support tools and executive information systems (EIS), said Roger Avise, group manager of financial systems at Nike's systems development department.

The sporting goods retailer has two AS/400 B50s at headquarters and uses AS/400s throughout its U.S. retail operations.

"We're looking at using Excel 3.0 as a basic decision support tool, which can be tapped into by another higher level EIS," Avise said. "The AS/400 and Showcase give us a fairly user-friendly way to extract data."

What distinguishes Showcase from other computer-aided software engineering tools or fourth-generation languages on the AS/400 is that Showcase contains cooperative processing modules to build macro programs, Elms said.

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Oracle passes beta test at Hartford Insurance

BY JEAN S. BOZMAN
CW STAFF

HARTFORD, Conn. — The Hartford Insurance Co., one of the few sites to beta-test Oracle Systems Corp.'s repaired release of its Version 6.0 relational database management system for Digital Equipment Corp. Vaxclusters, reports substantial performance improvements over using Version 6.0 on a single VAX machine.

"What used to take 30 to 50 seconds now takes two to 10 seconds to do," said James J. Bosco, manager of Group Information Processing and Reporting at Hartford's Employee Benefits Division. "We concluded in the week we tested it that we had put enough [data] through it to know that it worked," he said. "We have a sophisticated [claims] application, and every aspect of it worked fine." The Employee Benefits Division sells group insurance to outside customers.

The test came in December 1990, when database managers from Hartford set up a test bed of two VAXs. Bosco said the claims application used in the test was one used in production on single VAXs at Hartford. Until now, single copies of Oracle 6.0, running on separate VAXs, have had to share data over Hartford's Decnet communications network.

"We use Decnet because we couldn't run the Vaxcluster version of Oracle 6.0," Bosco said. Instead, Oracle's SQL*Net interconnect software links the multiple Oracle DBMSs at Hartford. Once Oracle 6.2 is shipped, however, multiple machines on a Vaxcluster will be able to share a copy of Oracle's DBMS, storing data in shared disk memory.

Oracle was forced to remove Oracle 6.0 support for Vaxclusters in late 1989, when excessive resource contention forced users to abandon the product [CW, Feb. 18]. While repairs were being made to Oracle 6.0, which had special transaction processing features and the new PL/SQL development language, users continued to use Version 5.0 on Vaxclusters or to support Oracle 6.0 on single VAX machines.

Deferred updates

Analysts said they believe that Oracle 6.2 works by deferring database updates, reducing the number of I/O transactions that must pass through the Vaxcluster's DEC Lock Manager. The DEC Lock Manager is integral to any Vaxcluster, preventing multiple VAXs from writing to the same portion of disk memory at the same time.

Although Oracle 6.2 cooperates with the DEC Lock Manager, it also contains its own "distributed lock manager," Oracle executives said recently. "They're doing their own logging [of Oracle 6.0 transactions] and their own locking effectively," explained Donald Feinberg, director of the Software Management Strategies program at Gartner Group, Inc. in Stamford, Conn. "Using the DEC Lock Manager function is expensive, so they use it minimally. If you use the DEC Lock Manager too much, your instruction path adds too much overhead [to the Vaxcluster system]."

Like others in the beta-test program, Bosco said he is ready to install 6.2 as soon as it officially becomes available. (The product is to be formally introduced later this month.) The Hartford has some 40 VAXs in a corporate network, in addition to a number of IBM mainframes. However, the firm has had to hold off on clustering some of those VAXs in the absence of the Oracle 6.2 software. "As soon as they release it," Bosco said, "we're ready to go."

Wheels keep rolling at AM General

Firm uses Tandem, IBM systems to make military vehicles used in Gulf

ON SITE

BY JEAN S. BOZMAN
CW STAFF

MISHAWAKA, Ind. — They call it the *Hummer*, a nickname for the military's High-Mobility Multipurpose Wheeled Vehicle. This replacement for the U.S. Army Jeep, camouflaged in shades of tan, has been winding through the war-torn desert of Saudi Arabia, Kuwait and Iraq.

Some 20,000 Hummers are estimated to have been involved in the Persian Gulf war, and they all come from one AM General plant.

AM General, a wholly owned subsidiary of LTV Corp.'s Aerospace and Defense Co., is the sole source of Hummers — whether used by the U.S. Air Force, Marines, Navy or Army. Since 1984, more than 80,000 Hummers have been made, mostly in shades of army green. A five-year contract begun in 1989 calls for another 23,000 to be built.

AM General's plant, with 1,000 employees, is a spin-off of the former American Motors Corp., which once made the Jeep and was sold to Chrysler Motors Corp. in 1987.

Hummer hodgepodge

Flexibility is a key at the 400,000-sq-ft plant, which can churn out a variety of Hummer models, ranging from three-quarter-ton troop carriers to military ambulances. The factory, powered by dual Tandem Computers, Inc. TXP processors and a remote IBM mainframe, operates as a just-in-time facility.

However, it has not always been that way: Until January 1990, the factory had larger stockpiles of parts, an IBM mainframe in a nearby South Bend, Ind., factory and a longer set-up process. The information systems department had 30 employees, more than double the current 12-person staff.

AM General *sent Hummers to the Persian Gulf*

However, the addition of new scheduling and production software, written for the Tandem systems by MPACT Systems, Inc. in Brookfield, Wis., updated older paper-based processes. "In the old method, we had to manually set up our [production] lines, and that took two people a day and a half to do," said Craig Weyers, manager of material systems at the plant. "Now, one person can break our weekly orders into a specific vehicle sequence, including variations, in 30 minutes."

In early 1990, an AM General reorganization resulted in the closing of the South Bend plant and reduced the overall work force by more than 500 people. Since then, efficiency and streamlining have become top priorities, as factory planners try to minimize overhead to weather governmental belt-tightening. The company also streamlined operations by outsourcing spare-parts storage and truck-packing as well as the South Bend IBM system.

MPACT software, which runs under the Tandem Guardian operating system, catalogs all materials received on the AM General plant's loading docks and matches those materials against Army orders placed on the remote IBM mainframe.

After that, all shop floor work is scheduled by the Tandem system and tracked as it winds its way toward the shipping docks.

Workers at the plant can access both the Tandem computer and the remote IBM 3090 mainframe from a network of aging IBM 3178 terminals. The remote IBM mainframe, owned by Genix, Inc. in Pittsburgh, is accessed over a multiplexed T1 line.

The 20M-byte, fault-tolerant Tandem system would blunt the effect of a power failure, IS managers said, adding that data for the Tandem databases is fully mirrored in 12 disk drives, with a total of 1.5G bytes of capacity.

Databases in sync

Communications between the Tandem and IBM databases is key to smooth operations, said Bill Smith, a senior IS manager at AM General. "We download data from the IBM mainframe every day, and we update its files at the same time," he said. "That way, both databases are in sync."

The IBM machine hosts Dun & Bradstreet Software's Millenium database for financial applications. Another database handles ordering and purchasing transactions.

There are a small number of personal computers at the plant connected by a Novell, Inc. local-area network, but IS managers still have to design a LAN/WAN connection between the plant's PCs and those at an engineering center in Livonia, Mich. AM General does not plan to upgrade the IBM 3178 terminals or the twin TXP processors anytime soon, Weyers said, citing budgetary constraints.

Even in wartime, the Hummers are being made on a one-shift-per-day basis, with just 60 vehicles rolling off the assembly line. Top production on two shifts would yield 95 to 100 vehicles per day.

SOFT BITS

Cray airs Unicos 6.0 software

Users of Cray Research, Inc. supercomputers have a new operating system release to sink their teeth into. Unicos 6.0 sports X Window System-based performance analysis and application development tools and supports Posix and the Open Systems Interconnect standards.

Another new feature is the Unicos Storage System, which Cray announced in July 1990. The storage system provides high-speed access to a large number of files on a variety of different vendors' storage media, Cray said. Beta-test sites for 6.0 included the NASA Ames Research Center and Sandia National Laboratory.

Boole and Babbage, Inc. has formalized its consulting services arm and is now offering consulting in direct-access storage device management, automated operations and capacity planning and management.

Hughes Aircraft Co.'s Radar Systems Group has awarded a subcontract to Telesoft. The vendor will develop Ada cross compilers and development tools for Hughes to use on real-time Intel Corp. 80960 microprocessors embedded into avionics, radar, navigation and other systems.

Calera Recognition Systems, Inc. announced that it has signed an OEM agreement with **Bull Worldwide Information Systems** in Massy, France. The agreement will license Calera's optical character recognition (OCR) board and developer's tool kit software on Bull's Imageworks document image management system on a worldwide basis. The decision was based in part on Calera's ability to recognize special character requirements of several European languages — a requisite to support Bull's multinational clientele.

Calera's international OCR engine currently supports English, French and German character sets.

A step beyond a database

Johns Hopkins' networked databases benefit genetic research

ON SITE

BY GARY H. ANTHES
CW STAFF

BALTIMORE — An interdisciplinary team at Johns Hopkins University has developed a new way to create and codify knowledge, one that combines the attributes of databases, electronic mail and books while blurring the distinction between creators and users of information.

The university's Laboratory for Applied Research in Academic Information has put together a linked pair of networked databases of human genetic information. One is On-line Mendelian Inheritance in Man (OMIM), a catalog of more than 5,000 inherited disorders and traits.

Logically tied to OMIM is the Genome Data Base (GDB), which was developed to support the international human genome initiative, whose goal is to completely describe the human genetic structure. GDB now holds 2,000 "mapped" genes showing the precise locations of genes on their respective chromosomes and information on 5,000 DNA segments. The GDB, which is based on Sybase, Inc. products, went on-line in September.

More than 3,200 users, mostly medical researchers and practitioners, access the two databases via Telenet or Internet.

More than simple data

The databases are not just repositories of raw genetic data; they also capture and reflect the ongoing wisdom of their creators and users. The GDB contains pointers to other databases and a bibliography of approximately 20,000 sources. Some are standard literature references, but increasingly, the sources are personal communications from researchers and users from the 75 to 100 scientific editors around the world who have authority to update GDB.

GDB draws data from the literature but also accepts unvalidated data directly from users for later submission to an on-line peer review process by globally distributed experts. "The database is both a product and a process," said Richard E. Lucier, the laboratory's director.

"Editors correspond with other experts; they have dialogs within the database," Lucier said. The dialogs are codified by an annotation and messaging system developed by Lucier's staff using C and Sybase's development tools.

A credible source

Because the resulting data is based on considerable give and take, the gene maps are known as "consensus maps." The consensus concept gives the GDB a very high degree of credibility among scientists, Lucier said.

Lucier calls the policies, procedures and technologies employed "knowledge management," which goes well beyond the traditional concepts of data storage and retrieval and whose goal is to integrate the library more fully into the scholarly communication process.

"People thought we wanted to build on-line books," Lucier said. "Electronic libraries just take existing information and digitize it. But GDB and OMIM are much more dynamic. Knowledge management forms partnerships with people creating information."

Because libraries focus on use of published data, their first worry is always access, Lucier said. However, the knowledge management approach worries first about collaboration between creators and editors, next about building a knowledge base and last about access. "We're not pushing the frontiers of technology; we are pushing useful applications of technology in everyday working environments," he said.

Lucier said the genome project could go forward without the database but in a slower, more disorganized way. "Results would be scattered throughout literature, there wouldn't be a dynamic gene map, and there wouldn't be the broad consensus of the scientific community."

Lucier said the knowledge management techniques developed at the laboratory are transferable to other disciplines besides medicine. "The primary problem is not technical; it's sociological, political and financial," he said.

Development of GDB and its associated software took one year, cost between $1 million and $2 million and was funded by the Howard Hughes Medical Institute. Although it is up and running, Lucier said, development will never be finished.

> THE POLICIES, PROCEDURES and technologies employ "knowledge management," which goes well beyond the traditional concepts of data storage and retrieval.

"Organization of the database will be good for about five years, then scientists will want to organize it differently, and that will require a whole new database," he said. Lucier added the successor to the relational database is likely to be a more flexible, object-oriented database.

Read-only copies of GDB are maintained in the UK and Germany, but all updates are networked to the database at Johns Hopkins. Both databases reside on a pair of Sun Microsystems, Inc. Sun-4/490 servers, which are attached to a campus-area network with gateways to Telenet and Internet.

One GDB editor is Phyllis McAlpine, a professor of human genetics at the University of Manitoba in Winnipeg. She has the final say on how each of the estimated 50,000 to 100,000 genes is to be named, and she said she may make 800 to 1,000 database entries per year, each of which is based on suggestions from around the world coming in by telephone, facsimile, mail or the database.

"It's a really neat concept," McAlpine said. "The contribution of the database to the field is invaluable. It's the one and only official record of every gene and piece of DNA that's mapped in the world."

Bull

FROM PAGE 25

frame supports 2,500 end users and inventory applications for the electric parts distributor's 200 warehouses.

Roy McRee, assistant general manager of IS, characterized Bull HN's service and support as excellent and said Graybar has no reservations about the proprietary architecture because the Bull 9000 series offers plenty of room for growth.

He added that Graybar currently has no plans to implement Bull HN's recently announced workstation products.

McRee did, however, express some concern for Bull HN's current financial status and seeming internal instabilities. "Their lack of settling is disturbing. Constant change within an organization ultimately results in failure," he said.

Major revenue builder

According to Maurice Gervais, director of Enterprise Systems Marketing at Bull HN, the high-end Bull 9000 series mainframe provides approximately half of Bull HN's U.S. revenue. While he acknowledged that the system has attracted little new business, he said there is activity in existing accounts both from upgrades and from midrange users eliminating multiple midrange systems in favor of one large machine.

"Most people want to avoid the agony and cost of climbing off platforms," said George Lindamood, program director at Gartner Group, Inc., a Stamford, Conn.-based market research and development firm.

He cautioned against vendors becoming too complacent with customer loyalty, however. "It either means you really are doing a good job or you're in for a hell of a shock somewhere down the road."

One Bull HN mainframe user, who asked not to be identified, said Bull HN's future did not concern him very much because he was sure that NEC Technologies, Inc., which owns approximately 15% of Bull HN, would be capable of maintaining the installed base.

Bull HN officials emphatically stated that high-end customers can expect more enhancements and additional product peripheral announcements during the coming year.

Good summed up overall user concerns for Bull HN's future. "As long as you see your support maintained at a reasonable level and there is no immediate handwriting on the wall, you always hope for the best."

Change in the works

With more than 1,000 DPS 6 minicomputers located at branch offices across the country, Metropolitan Life Insurance Co. quickly became one of Bull HN's most visible sites, and Senior Vice President Daniel J. Cavanagh one of its most oft-quoted users.

Met Life's Cavanagh *is satisfied with Bull*

Now, almost one decade after the system installations at Metropolitan Life, Cavanagh said that while the insurance company is still committed to the DPS 6, it is moving slowly to replace the systems with LANs and intelligent workstations.

The DPS 6s are currently linked to the company's two IBM 3090-class mainframes over IBM's Systems Network Architecture.

According to Cavanagh, Bull HN will be the systems integrator for LAN and PC installation.

"Bull has done a good job for us, and the business side of the house is satisfied, but the DPS 6 is 7-year-old technology," Cavanagh said.

He added that in some cases, the minicomputers will remain as file servers, but the company is basically interested in MS-DOS platforms with a server running under the OS/2 operating system.

While Cavanagh acknowledged that MS-DOS is not as open as Unix, he pointed out that it is not a proprietary platform, either. The insurance company has been working successfully with Zenith Data Systems MS-DOS-based laptops for more than three years, issuing them to field sales agents who in turn can plug them into the DPS 6 platforms.

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   21 Dir./Mgr. MIS Services, Information Center
   23 Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgt., Dir./Mgr. PC Resources
   22 Dir./Mgr. Sys. Development, Sys. Architecture
   31 Mgrs., Supvr. of Programming, Software Dev.
   32 Programmers, Software Developers
   90 Sys. Integrators/VARs/Consulting Mgt.
   OTHER COMPANY MANAGEMENT
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   41 Engineering, Scientific, R&D, Tech. Mgt.
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   D. Communications Systems
   E. Local Area Networks
   F. No Computer Involvement

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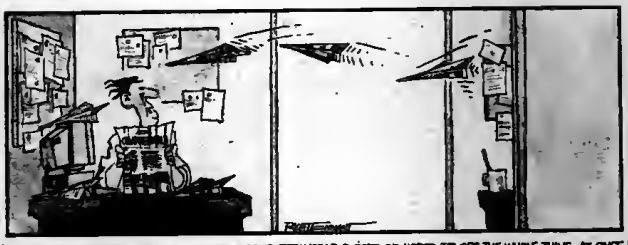

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   80 Manufacturer of Computers, Computer-Related Systems or Peripherals
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   90 Computer/Peripheral Dealer/Distr./Retailer
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   31 Mgrs., Supvr. of Programming, Software Dev.
   32 Programmers, Software Developers
   90 Sys. Integrators/VARs/Consulting Mgt.
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   41 Engineering, Scientific, R&D, Tech. Mgt.
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PRODUCT REVIEW

IEF: A worthy CASE competitor

Texas Instruments, Inc.

This is the ninth in a monthly series of performance benchmarks that focus on the integration of computer-aided software engineering (CASE) and fourth-generation language (4GL) products. The benchmarks are monitored by an independent team headed by David Whiteside, managing director of Computing Futures Ltd., and his associate, Prof. Eberhard Rudolph, formerly of the University of Auckland, for exclusive publication in Computerworld.

Each product is observed in action over a three-day period during which a vendor team solves the case study project costing system, an application that is familiar to most information systems professionals. The team's mission is to demonstrate the capability of the major CASE/4GL environments to deliver complete and complex business solutions under "live fire" conditions. In this issue, we look at the Information Engineering Facility (IEF) from Texas Instruments, Inc.

•

Carried out by Texas Instruments in Plano, Texas, a team of three people demonstrated that integrated CASE tools can deliver ready-to-use information systems generated from analysis and design specifications. Completion of the benchmark was an achievement. Other integrated CASE tool vendors withdrew from the benchmark series when the full size of the task became visible. The IEF's final solution was robust; however, the tool's pedantic insistence on detail created unnecessary complexity. The application logic was difficult to comprehend at times, even by expert developers. This resulted in excessive development times and forced the team to curtail certain stages of the benchmark. We rated level of completion as "fair."

•

The initial development was carried out on three IEF personal computers. The PCs were coordinated by a central mainframe encyclopedia. This required much up- and downloading, which also took considerable time to compile. Combined with the burden of attention to detail, the time of 66 hours for an incomplete solution was longer than average and, at best, rated "fair" for speed of development.

•

The maintenance stage was impressive. For the first time, we saw maintenance from the design level. The team not only analyzed the maintenance requirements using the logical models, but they also implemented the changes at this level. The resulting physical changes were implemented almost automatically, which resulted in a fast and rigorous solution. We gave IEF an award of "excellent" for speed of maintenance.

•

At all levels, documentation was also "excellent." The graphics were of exceptionally good quality and easy to derive. More importantly, the documentation is dynamically synchronized with all steps of development.

•

IEF's development of the solution was an excellent demonstration of a fully integrated platform. The initial analysis and design flowed through to the implementation, mastering the hard part of generating code from the design level. We have no hesitation in awarding a mark of "excellent" for the level of integration.

•

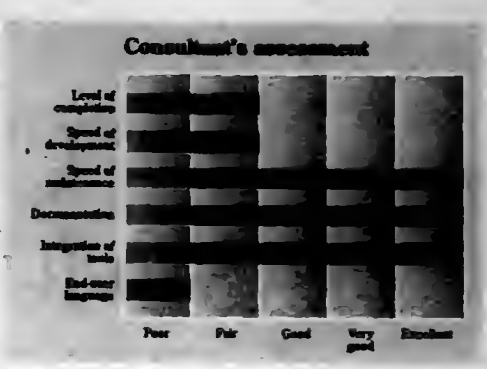
IEF does not provide an end-user language, although TI could have used third-party products. Instead, it chose IEF code generation for the inquiry stage. Even for a professional programmer, such report generation is difficult to handle. As an end-user language, we rated it "poor."

•

In summary, IEF proved that CASE tools can deliver operational information systems even under tight user constraints. While its support of the analysis and design stages is excellent, improvements are needed in the implementation stage. At that level, the tool is quite inhuman, causing unnecessary programming errors. It is pleasing to see that IEF can successfully compete with established development environments at all stages.

The IEF tool kit

- Information Engineering Facility — Full-cycle CASE tool including Cobol generator
- DB2 — IBM database



Development and maintenance report card

Performance is graded from A (excellent) to F (poor).

ANALYSIS AND DESIGN: A
Within a few minutes, the team generated the initial entity relationship diagram that formed the basis for the analysis and design of the system. The business logic supported by the benchmark application was also included.
Strength: It is fast and effective.
Weakness: None was found.

DATABASE SETUP: A
The data structures defined in the planning stage were physically implemented on the mainframe computer in DB2. The necessary data definition statements and job control language were automatically generated.
Strength: Code is automatically generated.
Weakness: Again, none was observed.

FILE MAINTENANCE TRANSACTIONS: D
This was a slow process. Although IEF enforces generation of syntactically and semantically correct code, many logical errors occurred. Developers were forced to make modifications at a very low program level, and this turned even small tasks into many lines of code. Some maintenance transaction features could not be completed in time.
Strength: It is robust when finally working.
Weakness: It is very time consuming and a breeding ground for logical bugs.

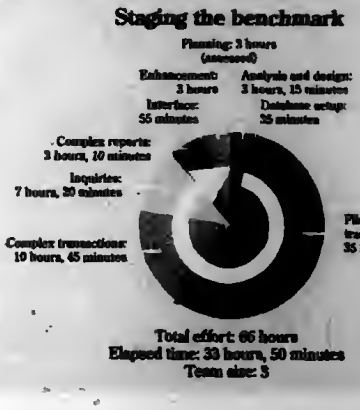
COMPLEX TRANSACTIONS: B
With increased complexity, the attention to detail paid off, and an experienced team member delivered a fully functional and pleasing solution.
Strength: Solution is well-presented and without flaws.
Weakness: Much attention to detail is still required.

INQUIRIES: F
Although the solution would have allowed the use of third-party end-user languages, the team decided to create the end-user inquiries in IEF. This was an extremely time-consuming process that required the skills of a professional programmer.
Strength: The solution finally worked.
Weakness: Excessive time is required, and it is hard to write.

COMPLEX REPORTS: C
Without a report writing facility, the team had to write an external Cobol program to complete the reporting procedure. Because of time constraints, the result could not be fully tested.
Strength: External routines can be integrated into solutions.
Weakness: It lacks a report writing facility.

INTERFACE: F
The Ashton-Tate Corp. Dbase files were converted into sequential files on the mainframe, making them accessible for IEF. The initial conversion to ASCII files was done using personal computer software. The upload to the mainframe was generated automatically. Time constraints kept the team from attempting to process the interface data and producing the error report.
Strength: Some conversion tools are available.
Weakness: Batch processes are time-consuming to develop.

ENHANCEMENT: A
For the first time, we observed an enhancement that was designed and implemented based on initial analysis and design. The strength of the integrated CASE tool approach was clear, leading to a rapid solution. However, it could not be fully tested because of time constraints.
Strength: Enhancement is derived from design.
Weakness: It is carried out without completing the initial solution.



The solution was developed on three IBM Personal System/2 workstations, one of which was connected to an IBM 3090 under MVS. The final system was tested and run on the 3090 with DB2.

Details about the product are available from Texas Instruments, Inc., The Information Facility, The Information Engineering Group, 50 Chase Oaks Blvd., MS 8474, Plano, Texas 75023, (214) 575-3683.

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HP survey details '91 trends

BY J. A. SAVAGE
CW STAFF

High-revenue companies place more importance on making diverse computers work together, while information systems managers in small- and medium-size companies are most concerned with refining database technology, according to a survey by Interex, the Hewlett-Packard Co. user group.

In a survey of 638 users, Interex found that companies with annual budgets of less than $500,000 are more concerned with acquiring and managing database technology than their counterparts with larger budgets. Those with budgets of more than $500,000 are more concerned with their applications development environments, interoperability and network integration.

Database concerns were also tops when Interex broke down the numbers between users of open systems and those with HP's proprietary systems. With Unix users, Unix standardization was the No. 2 concern, trailed by applications development environment.

Personal computers appeared to be what users worried least about. PCs placed fifth for concerns of users with a budget of under $100,000 and fourth for those who had less than $500,000 to spend. Those with budgets over $500,000 did not even find PCs worth ranking.

Solbourne introduces Sparc server

Aiming at the office instead of the computer room, Solbourne Computer, Inc. in Longmont, Colo., recently introduced a server based on Sun Microsystems, Inc.'s Scalable Processor Architecture (Sparc).

An earlier Sparc-based server introduced in mid-1990 used the same 40-MHz processors but was designed for the computer room, according to a spokeswoman. It topped out at eight processors. The new Series 5E/800I is in a desk side, modular package and can be configured with up to four processors.

Pricing for a single-processor 5E/800I starts at $74,900, and four-processor prices begin at $271,995. The latter is rated at 114 million instructions per second and 71.6 SPECthruput (a measure of workstation speed rated by a coalition of companies called the System Performance Evaluation Cooperative), according to the company.

IBM reworks storage tools

IBM recently announced that it has fine-tuned its system-managed storage product set with the enhancement of two key components.

The new releases of Data Facility Hierarchical Storage Manager (DFHSM) and Data Facility Sort (DFSort) will start shipping later this month, a company spokesman said.

According to IBM, Version 2 Release 6 of DFHSM is a major step up from the previous release with its new facilities to ease data migration to the system-managed storage environment.

One addition is the ability to manage primary space management in a multitasking mode. According to an IBM spokeswoman, performance gains of as much as 50% can be achieved, although improvements will vary for individual customers.

Customers can upgrade to Release 6 at no extra charge.

The latest DFSort, Release 11.1, will provide more tools to increase productivity, including one facility called Icetool. This tool enables users to perform several operations on one or more data sets within the same job step, according to the company.

NEW PRODUCTS — SOFTWARE

System software

Raxco Software, Inc. has announced Version 5.0 of Perfectdisk, a Digital Equipment Corp. VAX/VMS performance management product that features disk defragmentation and directory compression.

Other features include disk auditing and analysis with presentation graphics, multiheader consolidation, a single-screen disk map and a real-time status display. The product costs between $1,050 and $8,750, depending on CPU size.

The company also initiated a foray into the distributed systems management arena with the announcement of Nodeview, a VMS/Unix resource management software package designed to facilitate various processes of tracking resource use of systems on local- or wide-area networks.

Pricing ranges from $150 to $300 per node, depending on the number of nodes.

Raxco Software
2440 Research Blvd.
Rockville, Md. 20850
(301) 258-2620

Computer-aided software engineering

Cognos, Inc. has introduced a computer-aided software engineering tool designed for Digital Equipment Corp. VAX machines.

Powercase is said to be completely integrated with Cognos' Powerhouse fourth-generation language, ANSI standard SQL relational databases and DEC's Record Management System. This integration enables users to automatically generate menus, screens, reports and batch programs required for high-quality business applications, the vendor said.

An initial license fee for a DEC workstation running Decwindows costs $15,000.

Cognos
67 S. Bedford St.
Burlington, Mass. 01803
(617) 229-6600

Software Architecture and Engineering, Inc. has introduced its Strategic Networked Application Platform template, a computer-aided software engineering tool designed to accelerate the development of distributed applications.

The product features ready-made software components, including an object-oriented data model, a graphical user interface and links to both networks and relational databases.

The template runs on workstations from IBM, Digital Equipment Corp. and Hewlett-Packard Co. Pricing begins at $28,000.

Software Architecture and Engineering
1600 Wilson Blvd.
Arlington, Va. 22209
(703) 276-7910

Cadre Technologies, Inc. has announced that its Teamwork/Ada is now available on Digital Equipment Corp. reduced instruction set computing-based Decstation and Decsystem product families running under Ultrix 4.0.

The product's structure graphs support most Ada constructs and facilitate transitions from design to code via one-to-one mapping of graphic design elements to Ada code, the vendor said.

The cost per user for a typical Decstation configuration is $5,000.

Cadre Technologies
222 Richmond St.
Providence, R.I. 02903
(401) 351-5950

ECS Associates, Inc. has announced SQL-Link-Plus, a software product designed to link two computer-aided software engineering tools: Cadre Technologies, Inc.'s Teamwork and Six Sigma Case, Inc.'s Canonizer.

The product enables designers and database managers to use Teamwork/IM's Entity Relationship Diagram to model a relational database's logical design, and Canonizer's normalization feature allows data to be normalized in third normal form and an output schema to be generated, according to ECS.

SQL-Link-Plus is currently available on Sun Microsystems, Inc. Sun 3 and 4 workstations, IBM RISC System/6000s and IBM systems running IBM AIX Release 1.0. Pricing ranges from $5,000 to $12,500 for versions that support from five to 20 users.

ECS Associates
3812 Sepulveda Blvd.
Torrance, Calif. 90505
(213) 378-9260

Utilities

Accelr8 Technology Corp. has announced a file conversion software package that runs on Digital Equipment Corp.'s VMS/Ultrix Connection 1.3, DEC's implementation of Transmission Control Protocol/Internet Protocol.

Trans8 was designed to resolve binary data differences between VMS systems and implementations of the Unix operating system, such as DEC's Ultrix.

Pricing begins at $2,076.

Accelr8 Technology
303 E. 17th Ave.
Denver, Colo. 80203
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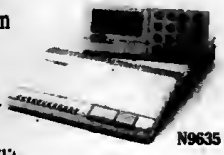

N9635

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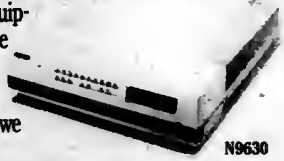

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Photo courtesy of United States Forestry Services.

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NEW PRODUCTS — HARDWARE

Power supplies

Sutton Designs, Inc. has added four new models, the MM-0.5kVA, MM-1.0kVA, MM-3.0kVA and MM-5.0kVA, to its MM-Series of on-line uninterruptible power supplies.

The units provide from 500-VA to 5kVA of continuously regulated output. Prices range from $1,290 to $7,990, depending on model.

Sutton Designs
The Dewitt Building
215 N. Cayuga St.
Ithaca, N.Y. 14850
(607) 277-4301

I/O devices

Vista Control Systems, Inc. has announced a 100-MHz, 24-bit multichannel scaler designed for Digital Equipment Corp. VAX 3000, 4000 and 8700 machines.

The Camac MCS 727 ($3,100) can simultaneously count random pulses into 32 independent scalers at a maximum rate of 100 MHz. Its time-framing input works in tandem with on-board memory to frame data into timed segments, and shadow registers are used with each scaler to accelerate memory updates, the vendor said.

Vista Control Systems
127 Eastgate Drive
Los Alamos, N.M. 87544
(505) 662-2484

Abaton Technology, Inc., a subsidiary of Everex Systems, Inc., has annnouced a six page/min, 300 dot/in. printer designed for multiplatform or networking environments.

The Laserscript LX is an Adobe Systems, Inc. Postscript-compatible device that is equipped with a National Semiconductor Corp. 25-MHz processor. Features include a serial port, two parallel ports and an Apple Computer, Inc. Appletalk port; a single paper tray for processing letter- and legal-size paper; and the ability to be used in Apple Macintosh or IBM Personal Computer environments.

The product is priced at $1,995.

Abaton Technology
48431 Milmont Drive
Fremont, Calif. 94538
(415) 683-2226

Output Technology Corp. has announced its Duraline series of 240 line/min printers designed for multiuser office environments.

The series includes a serial/parallel model and twin-axial and coaxial models. All the Duraline models feature built-in bar codes, print buffers up to 20K bytes and 12 international character sets.

The printers are priced at $2,995 or $3,995, depending on type of model purchased.

Output Technology
E. 9922 Montgomery Drive
Spokane, Wash. 99206
(509) 926-3855

Data storage

Dataram Corp. has introduced a memory expansion board designed for Digital Equipment Corp. Vaxstation 3100 Model 76 and Decsystem 5100 workstations.

The DR-5100 is available in three versions: The 4M-byte board for the DEC Vaxstation 3100 Model 76 is priced at $1,000, and the 8M- and 32M-byte models for the Decsystem 5100 workstations are priced at $2,000 and $10,000, respectively.

Dataram
P.O. Box 7528
Princeton, N.J. 08543
(609) 799-0071

Control Data Corp.'a Computer Products Group has announced a file and storage management system designed to handle large volumes of information within data centers or client/server environments.

The Unitree System was developed by Distributed Computing Solutions, a division of General Atomics. It automatically migrates files among peripheral devices to minimize the amount of on-line storage on a system.

Some file access can be done transparently, depending on what type of Unitree program is installed on a client platform, the vendor said.

The system also features a Unix interface. The product is scheduled for a second-quarter release, and pricing begins at $47,500.

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Metrum Information Storage has announced a helical-scan technology-based digital tape drive that uses ½-in. T-120 tape cartridges as its storage medium.

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COMMENTARY

Patricia Keefe

Promotional consideration

You guys kill me, Bob Holmes, a research analyst at Southern California Gas Co., found cause for great amusement when he first heard Lotus was offering a free copy of its Microsoft Windows-compatible Ami Pro word processor to 1-2-3 Release 3.1 buyers. He speculated that giving users a Windows word processor to play with might actually encourage them to go look at a Windows spreadsheet.

The only one on the market today, of course, is rival Microsoft Excel 3.0. Users have to wait until June at the latest for 1-2-3/W. "Is [Lotus] shooting themselves in the foot with that promotion? One really wonders if they thought this through," Holmes said. On that point, probably not, but what Lotus is clearly doing is seeding the Windows word processor market in hopes of gaining mind and market share — a tact that a few OS/2 users fervently wish IBM would take with OS/2.

We may be seeing the beginning of a wave of freebies or very low-cost offers designed to open a crack in key markets that have settled down into ironclad market shares distribution. We certainly seem to have entered

Continued on page 42

IBM's strategy for XGA excludes reseller deals

ANALYSIS

BY MICHAEL FITZGERALD
CW STAFF

IBM senior engineer Al Basilico caused quite a stir at the Feb. 21 Video Electronics Standards Association (VESA) meeting in San Jose, Calif., simply by erroneously saying that IBM would become an OEM, selling the chip set for its new Extended Graphics Array (XGA) video controller to other manufacturers.

Third-party vendors and analysts alike were abuzz over the statement. Michel Castro, graphics analyst at Dataquest, Inc., initially predicted he would have to revise his forecast for the high-end (1,024- by 768-pixel resolution) graphics market, perhaps tripling his projections. Jim Anderson, chairman of VESA and director of strategic marketing at board maker Headland Technologies, Inc., said IBM "may just get the standard faster because of this."

However, the excitement was premature.

"Al Basilico chose OEM unfortunately: IBM is not getting into the business of manufacturing and distributing chip sets" to other companies, IBM spokeswoman Madeline Epstein said.

This is not to say IBM is washing its hands of cooperation with third-party graphics companies. Epstein said IBM is "interested in ... providing the technology to other companies and in addressing the development of chip sets."

In the meantime, confusion reigns at the high end of the graphics market. According to Jon Peddie Associates, an Oakland, Calif.-based graphics consultancy, there are 583 boards, both Video Graphics Array (VGA)- and non-VGA-compatible, that offer users 1,024- by 768-pixel resolution or better. Choices at the high end include Super VGA, the VESA standard, Texas Instruments, Inc.'s Graphics Architecture, XGA (although it is available only from IBM and only for the Micro Channel Architecture bus) and IBM's 8514/A technology.

But does the average user care about this technology? Castro said they will.

"We feel 1,024 by 768 is probably an optimal resolution for most PC users on their desks," Castro said.

However, at the moment, users have to wait out the struggle

Continued on page 43

FEATURE: PRESENTATION GRAPHICS

Razzle-dazzle, plain and simple or in between?

BY DEREK SLATER
CW STAFF

Ten minutes to sell your idea to the higher-ups: Do you dim the lights and dazzle them with a fast-paced, multicolor slide presentation? Do you hand over 12 black-and-white pages of statistics and hope for the best? Or is there a middle ground?

Presentation graphics software puts the first option within reach of the average corporate personal computer owner. However, more familiar office applications such as spreadsheets are no longer limited to sterile statistical output: Standbys such as Lotus Development Corp.'a 1-2-3 and Microsoft Corp.'a Excel are adding powerful graphics facilities of their own. Now users face a choice between the panache of presentation graphics and the ease of using new graphical possibilities in old favorites.

For many users, presentation software meets a very distinct need. "When you're up in front of fifty people, you don't necessarily know what you're doing," says Kathy Klein, laboratory director at Calumet Public Hospital in Laurium, Mich., who uses Microsoft'a Powerpoint to create educational presentations for staff training and public discussions.

"One of the great things is being able to run the show just by tapping the mouse. If someone asks you to go back to the diagram two windows ago, you can just click back over there."

Organizing a discussion is just the tip of the iceberg for presentation software. Users can produce color slides with bar charts and pie charts from imported spreadsheet data, illus-

Continued on page 40

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These are just a few of the 50+ technical sessions scheduled for this year's Conference. But the Micro Focus Users Conference is more than three days of seminars; it's a unique opportunity for developers to meet the Micro Focus technical and support staffs and share solutions with other users through the Conference's Special Interest Groups.

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Robot works out on-line

BY J. A. SAVAGE
CW STAFF

FALMOUTH, Ky. — No-sweat design. That is what Hammer/Strength, Inc., which manufactures equipment to make people sweat, does by using three-dimensional graphics instead of perspiring humans.

Reggie, a 3-D, 232-pound, six-foot athlete, exists in the Hewlett-Packard Co. ME Series 30 engineering software on HP workstations. "We don't make something and test it. We have Reggie simulate it and build a machine around him," said Gary A. Jones, director of manufacturing and engineering at Hammer.

Jones started in the athletic equipment business with his father, who established Nautilus. He branched out with Hammer in 1988, although he began designing Reggie when he was with Nautilus. "Over time, he became quite sophisticated. He can do damn near all the things that $100,000 packages can do," he said.

Reggie allows Jones to analyze which muscles are stressed by movement on a machine. "You want to follow the most efficient pattern. It's not that complex, but it's hard to visualize."

For instance, Reggie's hand, a program in itself, can grasp the handlebars on some future Hammer machine in the design stages, and Jones can diagnose how pressure on the handles affects Reggie's grip or whether the handlebar puts Reggie's wrist in an awkward position.

With a staff of fewer than 20; an HP 9000 Model 375 Turbo SRX, HP's graphics workstation based on Motorola, Inc.'s 68030 processor; an HP 9000 Model 370 C, which is based on the Motorola 68020 processor; one Vectra personal computer; and an HP 3000 minicomputer with eight terminals, Hammer turns out more than one dozen new products per year.

Jones said he will stick to HP's engineering software despite the availability of specialized graphics and despite what he calls an "outrageously terrible job of marketing" by HP. "Other systems are fast, but I needed the software first," he said.

Reggie, *an on-screen, 3-D 'athlete,' tests physical fitness equipment for Hammer/Strength. Reggie resides on HP workstations*

PC system tackles Calif. drought

Networked remote units monitor rainfall, collect data for conservation

ON SITE

BY JAMES DALY
CW STAFF

LOS ANGELES — With California cracking under its worst drought in years and prayers for rain still going unanswered, civil engineers are scrambling to avert the waste of even one bucketful of the precious wet stuff.

In parched Los Angeles County, where more than 8 million thirsty people consume nearly half a trillion gallons of water annually, the department of public works has turned to high technology to preserve the few cherished drops that occasionally fall from the sky. "We can't make it rain, but we try to hold onto it for as long as we can once it's down here," civil engineer Craig David said.

One important component of the hydrological management plan is the collection of storm water that would normally drain rapidly into the Pacific Ocean. Ironically, the quick drainage is intentional, the product of a different, wetter time.

A disastrous flood that swept out of the San Gabriel Mountains in 1910 led to the creation of concrete-lined channels that carry storm water from the mountains to the Pacific Ocean. The channels succeeded in protecting low-lying areas from torrents of fast-moving debris-laden flood water, but they also robbed the arid land of its chance to soak up the water enroute to the sea.

Modern urban design has worsened the situation. Rain splashing onto a paved street or parking lot is often siphoned directly into the channels, where it races to the Pacific.

Because of this double whammy, the county created a series of water spreading areas where storm runoff is collected in soft bottom basins and allowed to seep back into the earth and replenish underground water supplies. The basins must be carefully and continually watched to ensure maximum distribution efficiency.

Datacommand, *a sensor/tracking system, is helping California water tanks stay full*

At the heart of the basin management program is the Datacommand telemetry system, a software- and personal computer-based structure developed by Sierra-Misco Telemetry Systems in Sacramento, Calif. Datacommand will replace manual operations at two of the major spreading grounds: the 128-acre San Gabriel Coastal Basin Spreading Ground and the 570-acre Rio Hondo Coastal Basin Spreading Ground.

Field information

Networked remote sensor units collect and transmit water flows and levels gathered at the canals and spreading grounds. Their information is then run through an equation program and transmitted to a series of Compaq Computer Corp. computers at the head works in Rio Hondo and at headquarters in nearby Alhambra, Calif.

"It provides us with a critical real-time link to what's happening in the field," David said. "Once a drop hits the street, it's into a drain and on its way to us before you know it. We want to be able to take in as much water as we can as fast as we can."

If one spreading ground is approaching overflow, for instance, Datacommand alerts engineers who can remotely control cast-iron gates to divert the intermittent runoff and prevent the waste of precious liquid. An overfilled spreading ground could have potentially tragic consequences if it fractures a levee, damages a water outlet structure or sends torrents of water rushing down a dry channel where workmen are doing repairs.

The new system has also shortened the time it takes for newcomers to understand the workings of the spreading ground system, David added.

Datacommand not only helps produce maximum water recharge; it will also reduce manpower in the field. Where it now takes approximately seven county employees to monitor and run the older operations, the telemetry is expected to reduce the total work force to three.

"This system has come through at just the right time," David said. "Now if we can just get the rain clouds to help us out."

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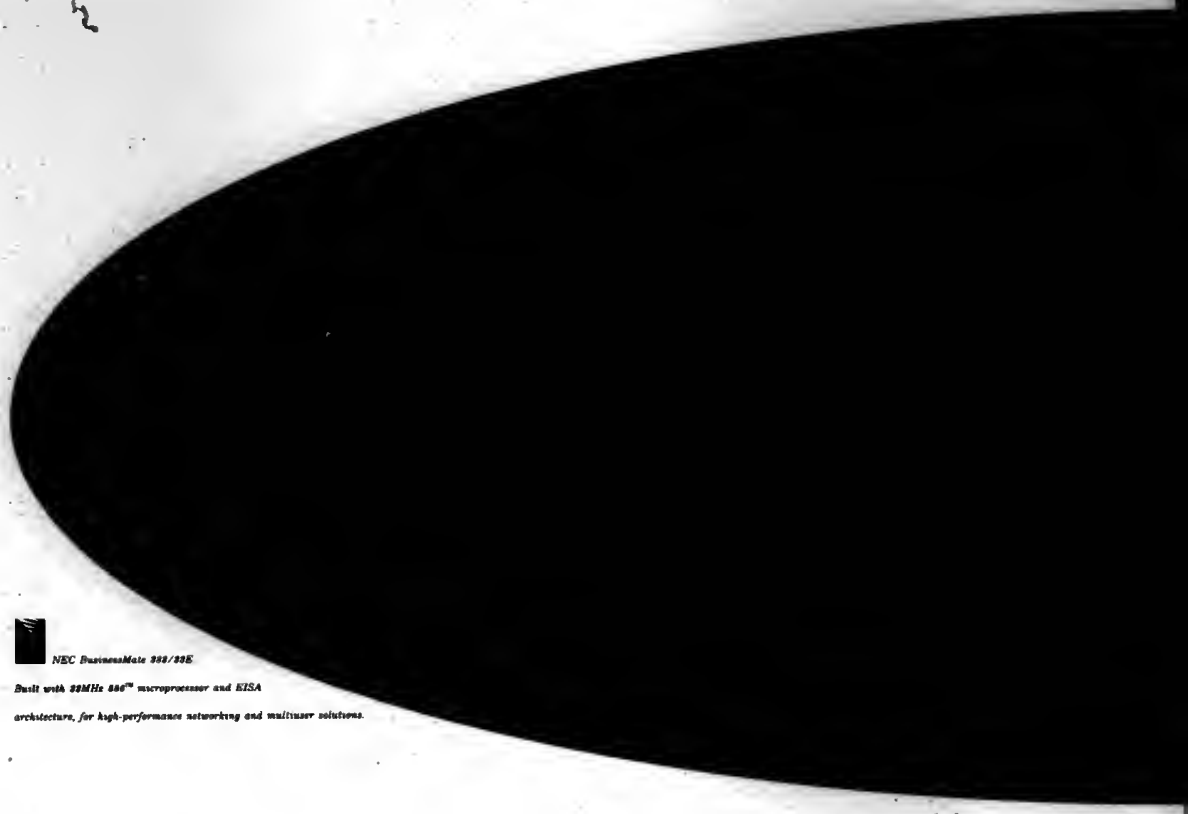

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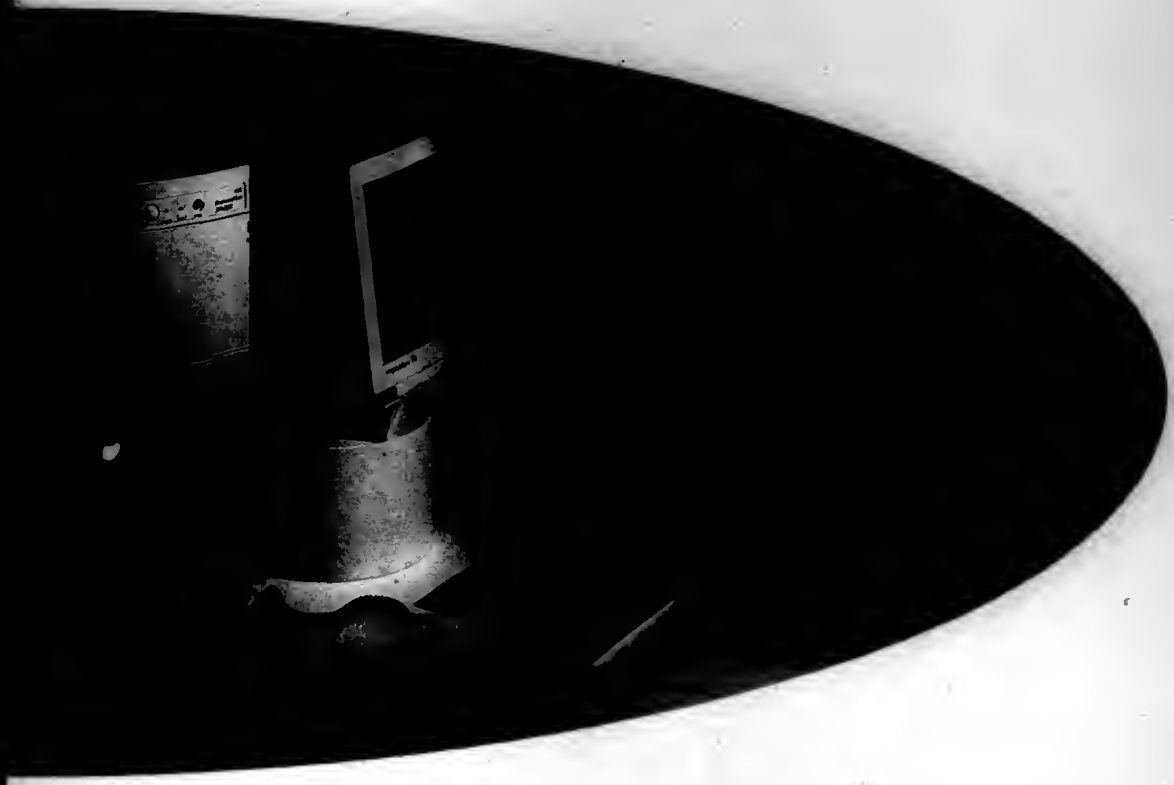

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PCs take command on campus

ON SITE

BY RICHARD PASTORE
CW STAFF

BOWLING GREEN, Ohio — At Bowling Green State University, placing personal computers in residence hall rooms is the second phase of a computer facility decentralization process. It is also the first step toward a long-range goal to allow all 8,000 resident students to plow through library databases, check their tuition accounts and register for courses — all from their dormitory rooms.

By the time next year's classes start in late August, all 172 rooms in Bowling Green's Chapman residence hall will be equipped with an Apple Computer, Inc. Macintosh Classic or, if the student chooses, a Macintosh LC, Macintosh IISI or IBM Personal System/2 55SX.

Chapman Hall is a test case. If student evaluations prove it worthwhile, the program will be expanded to approximately 4,000 dormitory rooms on the square-mile campus. Reports show 97% of surveyed students favored having PCs in their rooms. Only 15% owned their own machines.

For the privilege, students will pay between $135 and $210 per semester, depending on the model selected. The nearly $300,000 Chapman investment will be fully funded by student payments over five years.

The Macintosh Classics will be configured with 2M bytes of memory and a 40M-byte hard disk. Microsoft Corp.'s Works will be the preinstalled software.

Computers to students

This installation is part of an evolutionary effort to bring the computer to the student. "Years ago, to use the computer, you had to go to the computer," said Richard Conrad, director of computer services. Eight years ago, the university supplemented central laboratories by adding small microcomputer laboratories in each residence hall. But even that was not efficient enough.

"The computers have been so popular, many times the students had to wait in line," said William Lanning, director of residence management/residential services. Space constraints made it impossible to expand the laboratories. So students who did not want to wait for a residence hall laboratory machine often had to walk across campus late at night to one of the central laboratories, something Lanning said he wants to eliminate.

With this program, the university also hopes to reduce drain on the campus' 3,500 laboratory PCs. As students gain use of in-room PCs, "I see the emphasis on our labs shifting from basic word processing to more specialized needs with more powerful computers," Conrad said.

The university chose the Macintosh Classic as the standard model because of its $1,000 price and because it is suited for the most common student applications. But the choice was not unanimous. "The College of Business doesn't agree with us; they favor the IBM," Lanning said. "So we're going to offer both sides just to be fair."

The PCs in the dormitory rooms — both Apple and IBM — will be linked via an Appletalk network to dot matrix and laser printers centrally located in the residence halls. The long-range scheme — perhaps two years away — is to tie the dormitory networks into the university's Transmission Control Protocol/Internet Protocol fiberoptic, connecting students to IBM and Digital Equipment Corp. mainframes as well as the library, the bursar and other offices.

As an experiment, *Bowling Green State University will place 172 Apple and IBM PCs in its Chapman residence hall*

The university will service the Macintoshes, while IBM will maintain the PS/2s. However, wear and tear is not the school's chief worry. "In the labs, we had kids beating on them all day. The utilization [in the rooms] will not be anywhere comparable," Conrad said. The real risk "is the computer growing legs and walking off."

The university originally considered a lockable cabinet to secure the computers. But the cabinets took up too much space in the small rooms, and the $400 to $500 cost was unworkable. Instead, the school will rely on wire cables to secure the machines to desks.

Lanning said he knows of only two other colleges with similar installations. However, with the the right budgeting and planning, any size campus could implement such a program, he said.

Razzle-dazzle

FROM PAGE 35

trate their work and wrap multiple text fonts around clip art images.

In fact, the plethora of powerful options could be the first stumbling block: State-of-the-art programs may offer more luxuries than the average business presenter needs. "If you don't know what you're doing, you make something that looks like it belongs on *'America's Funniest Home Videos,'*" says analyst Frances Mendelsohn at Information Strategies Group in Vienna, Va.

"The important thing isn't trying to have one more feature than the other programs," says Joe Sanchez, an applications specialist and Lotus Freelance user at Florida Power and Light Co. in Miami. More important is simplifying and speeding up the development of presentations. Another problem is that high-end packages may carry heavy systems requirements. "We have 650 286-based machines. We can't throw out good computers just because the software industry says so," says Jim Turner, a staff specialist at the South Coast Air Quality Management District in California.

For many, the answer is simpler: business graphics programs. The runaway market share leader at 57% is still the relatively venerable Harvard Graphics from Software Publishing Corp., according to Information Strategies Group. However, while users generally applaud the program's ease of use, some acknowledge its shortcomings.

"Harvard Graphics isn't the least capable program on the market, but in your straight pie charts there's often some limitation — something you can't do," Turner says.

"IN THE AVERAGE business presentation, it's not like we miss the ability to do advanced Bezier curves."

Joe Sanchez
Applications Specialist
Florida Power and Light

Nevertheless, the low-end programs offer plenty of functionality for most users. "In the average business presentation, it's not like we miss the ability to do advanced Bezier curves," Sanchez says.

For others, the answer may be outside the traditional avenues of graphics applications. Some say they believe the graphical capabilities already within spreadsheets such as Informix Software, Inc.'s Wingz and being added to 1-2-3 could challenge low-end dedicated graphics programs such as Harvard Graphics. "There's a blurring there," Mendelsohn says. New possibilities offered by spreadsheets include three-dimensional graphs, text wraps, icons and multiple fonts. Many word processors have also gained charting facilities.

At Contel ASC, a division of Contel Corp. in Rockville, Md., Bill Remmert oversees production of a monthly review, which is presented to company management — and executed without presentation software. "We use [Microsoft's] Excel and Word for Windows, and it looks very crisp, very sharp," says Remmert, the division's director of end-user computing.

Bob Martin, manager of executive support systems at Eaton Corp. in Cleveland, says the new graphics power in Release 3.1 of Lotus' 1-2-3 eliminates some of the need for his business graphics program.

Even as many other applications continue to add graphics features, however, analysts and users agree that some fundamental distinctions currently set presentation software apart.

Spreadsheets are presently unable to handle word charts, which comprise up to 75% of presentations, according to Bill Coggshall, president of New Media Research, Inc. in Los Altos, Calif. Technical charts may also stretch the abilities of spreadsheet graphics. Ronald Houck, senior systems designer at Marion Merrell Dow in Indianapolis, uses Zenographics' Mirage presentation program in addition to Excel. "We're in research and development and need more scientific graphs with standard deviation, for example," he says. "That's beyond what most spreadsheets can do."

Word processor woes

Similarly, word processors lack the ability to handle numeric charts and graphs. Standard applications also cannot walk the user through the process of developing a presentation, Coggshall notes. "A word processor doesn't know you're doing a presentation," he says.

Finally, presentation packages are not likely to stand still while other applications gradually overtake them in features. Coggshall speculates that presentation software will gradually migrate to hypermedia platforms. "Hypermedia can bring motion, which is important for keeping people awake and paying attention. Video clips that are funny or poignant are very memorable," he says. Executive information systems may also prove fertile ground for presentations, Mendelsohn says.

Slater is a *Computerworld* staff member.

First Notes group founded

BY PATRICIA KEEFE
CW STAFF

NEW YORK — The first meeting of a Notes user group has already cemented a promise from Lotus Development Corp. to run a bulletin board tying the participants together for information exchange.

Notes users are already tied into Lotus via their Notes servers. The user group plans to replicate a bulletin board through the Lotus Notes server to all members.

Users can use the bulletin board to communicate between meetings; keep track of and register other Notes users and projects; and broadcast enhancement requests for comment, according to Mike Mandelbaum, a specialist with The Chase Manhattan Bank NA's Notes Applications Group.

There is even talk of establishing a library of notes applications, said Eric Sall, Lotus' director of application marketing for Notes. Users talked about approaches to deploying Notes, standardization of procedures and programs and application ideas, he said.

The Jan. 21 meeting attracted about 30 people representing eight companies. The next meeting will be held March 21 at Chase, Mandelbaum said.

Supercalc 5 short on speed but capable

Technology Analysis — a roundup of expert opinions about new products. Summary written by Computerworld *staff member Derek Slater.*

According to Computer Associates International, Inc., Supercalc 5 Revision D, last year's upgrade of Supercalc, is intended primarily to enhance performance. Surprisingly, personal computer publication tests found that it falls short in that very area while stacking up well in graphics and analysis as well as overall value.

Performance: Supercalc 5 users can manage multiple worksheet windows and refer cells to external data stored in memory or on disk. The program suffers from some limitations in working with nonactive multipage worksheets. In addition to a full range of standard number-crunching features, Supercalc 5 offers multiple regression analysis and can handle matrices. It also performs minimal recalculations on a user-defined range of cells. While this spreadsheet is missing a few advanced abilities found on high-end competitors, most reviewers found Supercalc 5 to be a very capable analysis tool.

Relative lack of speed is still the performance drawback for Supercalc 5. It finished toward the back of the pack in *Infoworld*'s benchmark testing.

Compatibility: Revision D is compatible with previous Supercalc versions and handles files from its mainframe sibling, also called Supercalc. Supercalc 5 works smoothly with Lotus Development Corp.'s 1-2-3 file formats. It also reads database files from Ashton-Tate Corp.'s Dbase III.

Graphics: Graphics features in Supercalc 5 are excellent, reviewers said. The package offers a variety of chart formats, including three-dimensional graphs, text charts and customization options. In fact, according to *PC Magazine*, the plethora of choices makes the menu confusing.

Database: Using external database files larger than random-access memory capacity requires a $149 add-in program.

Output: Revision D enhances printer support for Supercalc 5. While it delivers high-quality spreadsheet publishing, it offers no page-break preview.

Documentation: The documentation is generally clear and fairly thorough, although the explanation of multipage spreadsheet use is not that detailed, according to *Infoworld*.

Ease of use: The complicated menu is an obstacle for first-time users.

Support: CA's support is rated satisfactory although unspectacular, reviewers said.

Value: On Feb. 25, 1991, CA permanently lowered Supercalc 5's price from a longstanding $495 to $149 — lower than many competitors' regular prices. It is a solid, character-based choice, particularly for users with less sophisticated hardware. However, reviewers recommended expanded memory to take full advantage of all its features.

CA's Supercalc 5 Revision D *stacks up well in graphics and analysis but lacks speed*

Reviews Summary

Criteria			
Performance	Good	Fair	
Compatibility			
Graphics	Very good	Strong functions	Solid
Database			
Output	Good	Excellent	Good
Documentation			
Ease of use	Satisfactory	Like 1-2-3 with more options	Menu cluttering for new users
Support	Satisfactory		
Value	Satisfactory	Good	Competitive
Reviewer's score	8		

Numeric ratings are based on a weighted scale of 1 to 10 where 10 is best. NC: No comment. These are excerpts from reviews. Refer to actual articles for details.

RATINGS

What the experts say

• **Users: John Kelley, senior computer specialist, U.S. Library of Congress** (*overall performance of product:* 5.5, *cost to get product up and running:* 7.5)

"The internal mechanics of Supercalc are very good and sufficient for our needs. I love the product — until you get to paper. They've made some half-hearted stabs at printer support but haven't gotten anywhere," Kelley said.

Keith Dolan, personal computer specialist, Hussey Seating Co. (7.5, 5)

"Other than the memory problems, Supercalc is OK. It has super graphics, but it takes up so much memory that the average person is limited in the size spreadsheet," Dolan said.

Charles Miller, Hammond Lead Products, Inc. (10, 10)

"I like the ability to do what I'm trying to do simply with few keystrokes," Hammond said.

• **Analysts: Earl Rich, Faulkner Microcomputer Reports** (8, 7)

"Supercalc has a promising interface, but it doesn't compete that well as a cost-effective program," Rich said.

Marshall Moseley, Dataquest, Inc. (7.5, 8.5)

"Its strengths are that it is three-dimensional and has some good graphics capabilities. Considering the features out there on some of its competitors, though, I think it's primarily best for CA's installed base. Its interface is an extension of the original Supercalc interface, and I think it is quirky and overly complex," Moseley said.

• **Financials: Chris Shilakes, Alex. Brown and Sons, Inc.** (*overall financial performance of product and company:* 8)

"We have their stock rated a strong buy. They have a strong balance sheet, next to no long-term debt and a very nice cash position. We project 10% to 15% long-term growth for the company," Shilakes said.

Jim Stone, Ladenburg Thalmann (5)

"They ran into some trouble in June; now they're on the rebound, but they aren't very forthcoming with information, so it's hard to tell how strong the rebound is," Stone said.

Steve McClellan, Merrill Lynch Research (5)

"They have lots of cash and good cash generation. From an earnings standpoint, they've been depressed for over a year. There's evidence of weakness there. It's not that they're losing money . . . They're just middle of the road," McClellan said.

Supercalc 5

score:

Points (maximum)	Category
18 (30)	Published reviews
16 (20)	Analysts' ratings
11 (15)	Users' ratings
15 (20)	Cost evaluation
9 (15)	Vendor financials

(Maximum score: 100)

CA responds

Comments from marketing manager Bob Ralston:

Performance: We are working on increasing speed. Supercalc 4 was quick, but we stuffed a lot more features into Supercalc 5. We are coming out with a new version by the end of March that is primarily intended to improve speed and memory management.

Graphics: [Microsoft Corp.'s] Windows opens up some new possibilities. We made a strategic acquisition of Manageware, Inc. in January. Their product is Compete, a hybrid multidimensional modeling/spreadsheet product for Windows.

Output: The first concern for our customers is the lack of what-you-see-is-what-you-get page preview; we're addressing that right now. The second thing is output device support. We're working with Canon U.S.A., Inc., Hewlett-Packard Co. and others to provide better native printer support.

Value: The off-the-shelf price is now $149; that isn't just a competitive upgrade price.

NEXT WEEK

▶ Local-area network monitors: Cheyenne Software, Inc.'s Monitrix 1.1 and Brightwork Development, Inc.'s Emonitor+ are reviewed based on how well they find problems.

Methodology: *Published reviews: average of numeric scores from product reviews published by personal computer publications listed in reviews summary chart multiplied by three. All ratings are based on a 1-to-10 scale, where 10 is excellent. Analysts: average overall product ratings multiplied by 2. Users: average overall product ratings multiplied by 1.5. Cost: average cost to get product up and running ratings from both groups multiplied by 2. Financials: average of financial analysts' ratings of vendor financials and ability to support product multiplied by 1.5.*

Keefe

FROM PAGE 35

a period of price cuts and heavy promotions for enhanced versions of existing packages.

That's not all, folks. What better follow-up to the recent Notes bash and announced plans to purchase CC:Mail than a rundown on upcoming Lotus announcements? Here we go:

On the Windows front, "Rockport," or 1-2-3 for Windows, is looking really good and should be on its way out to beta-test sites. June is still the scheduled date unless Lotus can ship it sooner. Reportedly, we may see a Windows version of Improv, the Lotus spreadsheet for the Next, Inc. platform. That's the first port on Lotus' list, another source says. As for Notes for the Apple Macintosh, well, still no sightings.

> "IS [LOTUS] SHOOTING themselves in the foot with that promotion? One really wonders if they thought this through."
>
> BOB HOLMES
> SOUTHERN CALIFORNIA GAS

But 1-2-3 for the Macintosh, also known as Houdini, is supposed to ship in October, complete with support for Apple's System 7.0. The graphics are supposed to be impressive, and users need not fear another Jazz interface debacle. Houdini will adhere to the Macintosh interface, and there will be a way for 1-2-3 PC users to quickly familiarize themselves with the Macintosh version.

One source tells us the product is "a little like Jazz," while another notes that Lotus will choke before it mentions Houdini and Jazz in the same sentence. A Lotus source maintains that Excel is too much like DOS and Windows and that 1-2-3 for the Macintosh is the true Macintosh spreadsheet (of course, Excel was developed on the Macintosh first).

Some work remains to be done on how the icons will be laid out, but we're told beta-test versions will go out shortly. The source also said that 1-2-3 for the Macintosh is the most requested product from Lotus users.

Yo! IBM raps. At least it plans to, possibly this month, in briefings to developers, users and analysts. A source familiar with the still-being-formulated announcement said IBM will primarily be addressing corporate developers. "You can expect them to promise a stable OS/2 2.0, making the point that if you want to work in a 32-bit environment, they'll be able to do it two years before Microsoft can with Windows," the source said, adding that IBM is "counting on the timing issue."

Also on tap is some AIX-oriented news. We're told by sources that IBM plans to have pieces of the unbundled Extended Edition certified to run on both third-party hardware and its own AIX systems.

Another source said users can also expect to hear a "rounding out" of the Officevision line, with IBM announcing support for OS/2, DOS and Windows clients. A Macintosh client could be 12 to 18 months down the road, a third source added. The Windows client was initially slated to ship in the first quarter, but as one analyst asked, "What difference does it make? Officevision LAN is a nonexistent product."

We just need a little patience. As the first quarter comes to a close, the first item in the November 1990 "Wordperfect Report" caught my eye. "For those eagerly awaiting a version of Wordperfect that supports the new graphical user interfaces including Windows, your patience is about to pay off. Wordperfect 5.1 for Windows is scheduled for release the first quarter of 1991." Uh, change that to second-quarter '91.

Keefe is *Computerworld*'s senior editor, PCs and Workstations.

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XGA

FROM PAGE 35

for a standard, a standard that may not be developed for 1½ to two years if it is going to be XGA. One standard at the high end may not be developed, leaving users to continue wading through choices.

Some analysts who initially predicted that XGA would solve this confusion and become the next graphics standard on the desktop have changed their tune.

For instance, Jon Peddie, president of Jon Peddie Associates, said he originally thought XGA would establish itself as a high-end standard, but he is less sure now.

"What does XGA bring to the party that we don't already have?" Peddie asked. "Not much. It's a nice piece of technology, but it's not an order of magnitude better than anything else."

Peddie said the "real magic" of XGA is its basic architecture, which allows IBM to design much higher resolution controllers that run at much greater speeds. The problem with current XGA is that this architecture "is too far removed from being a direct benefit to the end user," he added.

"Right now, it's just kind of an expensive curiosity relative to VGA," Peddie said. In the meantime, the high end of the market will be confused for at least the next two years, according to Peddie.

"The XGA clearly has a better architecture for 1,024 by 768 than VGA. VGA boards are extendible to that," said Anderson, who works at a company that makes VGA boards. "We appear to be getting very good performance out of it, but XGA was truly designed for a windowing environment. I've got to say that it's a good architecture."

IBM will develop a version of XGA for the Industry Standard Architecture bus that could give it more leverage in the industry, Basilico said at the VESA meeting. IBM would not confirm these comments.

Frank Michnoff, an analyst at Meta Group, Inc. in Westport, Conn., said he thinks XGA will succeed in becoming the next standard in just over the same two- to three-year time span VGA needed to establish itself.

On the other hand, Michnoff acknowledged previously unsubstantiated rumors that Compaq Computer Corp. may be planning to advance a different personal computer graphics standard.

"If Compaq and others get together to design their own graphics spec, clearly that would signal a greater bifurcation in the marketplace," Michnoff said. "The era of IBM compatible is over, and the era of IBM comparable is in."

Senior writer Richard Pastore contributed to this report.

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MICRO BITS

Courses offered

In exchange for a onetime licensing fee and the cost of student materials, companies that offer network training can give their customers training courses developed by Microsoft University. The three available course sets include LAN Manager, SQL Server or OS/2.

Now shipping, according to their vendors: Lotus Development Corp.'s Freelance Graphics for OS/2 ($400), Symantec Corp.'s upgraded Norton Editor Version 2.0 ($99), Wordperfect Corp.'s Wordperfect Executive for The Poquet Personal Computer ($250) and Erudite Corp.'s Sagacity assignment modeling program ($1,595).

Lotus and Next, Inc. are extending through March 31 a promotion that provides Lotus' Improv free to those who buy Next's newest Motorola, Inc. 68040-based computers.

NEW PRODUCTS

Systems

Tyan Computer Corp. has announced an Intel Corp. 1486-based workstation designed to run Unix- and MS-DOS-based applications.

Voyager features single-board architecture and a dual-computing platform design that enables users to run both Unix and MS-DOS operating systems. The system includes 256K bytes of second-level cache memory, 8M bytes of random-access memory and a 64-bit data bus.

A standard configuration is priced at $9,999.

Tyan Computer
612 N. Mary Ave.
Sunnyvale, Calif. 94086
(408) 720-1200

Topline Technologies, Inc. has announced an Intel Corp. 80386-based, 33-MHz system equipped with a 256K-byte cache and burst mode memory access.

The Topline 386/33 is certified for use as a personal workstation or file server under Novell, Inc. Netware. The unit supports 256K-, 1M- and 4M- byte dynamic random-access memory chips for up to 64M-byte configurations, according to the vendor.

A basic unit is priced at $4,295.

Topline Technologies
310 E. Orangethorpe Ave.
Placentia, Calif. 92670
(714) 524-6900

DFM Systems, Inc. has announced a 4½-pound, Intel Corp. 80286-based notebook computer equipped with a bar-code interface and a touch-screen overlay.

The Travelite 286 includes a 12-MHz, zero-wait-state portable system module designed to accommodate up to 4M bytes of random-access memory and a 20M- or 40M-byte hard drive.

Keyboard connectors and IBM Color Graphics Adapter and Enhanced Graphics Adapter video outputs are also included. An optional digitized speech feature for voice prompting or touch-response applications is also present.

A basic unit costs $2,495.

DFM Systems
1601 48th St.
West Des Moines, Iowa 50265
(515) 225-6744

Software utilities

Parsons Technology has announced Version 2.0 of Virucide, an antivirus program designed to detect and eliminate more than 240 virus strains from floppy disk, hard disk and network drives.

The product includes a virus reference file, an unattended operation feature and on-screen displays containing data about detected viral strains.

System requirements include an IBM Personal Computer XT, AT or compatible, 256K bytes of random-access memory and DOS Version 2.0 or higher. Virucide Version 2.0 is priced at $49.

Parsons Technology
375 Collins Road N.E.
Cedar Rapids, Iowa 52402
(319) 395-9626

Reference Software International has announced an upgrade to Grammatik IV, its grammar and spelling checker designed for IBM Personal Computer XTs, ATs, Personal System/2s and compatibles.

Grammatik IV Version 2.0 includes hundreds of grammar and style rules and supports mouse devices such as those designed by Microsoft Corp. and Logitech, Inc.

The product began shipping last month. A specialized version, Grammatik IV Version 2.0 Government Edition, which proofreads documents according to government-specified guidelines, started shipping last month.

Single-user and five-user business or government packs are priced at $99 and $245, respectively.

Reference Software International
330 Townsend St.
San Francisco, Calif. 94107
(415) 541-0222

Data storage

Storage Dimensions, Inc. has announced its 650 MB series of 5¼-in. erasable optical disc subsystems that features average seek times of 70 msec and 7.4M bit/sec. data transfer rates.

The 650 MB series includes 16-bit bus mastering adapter cards for IBM Personal Computer AT and Micro Channel Architecture-based platforms. Compatibility with most major operating systems, including DOS, Novell, Inc.'s Netware, Unix, Xenix and OS/2, is also featured, according to the vendor.

Pricing begins at $5,495.

Storage Dimensions
2145 Hamilton Ave.
San Jose, Calif. 95125
(408) 879-0300

Amkly Systems, Inc. has announced the Ampac-SLT line of memory expansion boards designed for Compaq Computer Corp.'s 20-MHz, Intel Corp. 80386SX-based SLT laptops.

Ampac-SLT includes 1M-, 2M- and 4M-byte models that are priced at $495, $895 and $1,495, respectively.

Amkly Systems
60 Technology Drive
Irvine, Calif. 92718
(714) 727-0788

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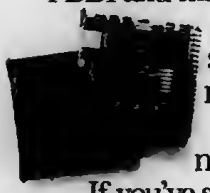

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Controllers limit LAN moves

BY ELISABETH HORWITT
CW STAFF

WHITE PLAINS, N.Y. — As IBM shops migrate from dumb 3270-to-host links to personal computer local-area networks, they are finding a stumbling block in the way: their old IBM cluster controllers.

IBM has periodically offered to buy back 3274s from users who agree to purchase the 3174s, a company spokesman said. Nevertheless, many users still use the old cluster controller — including some companies that want to move to LANs. In addition, they are finding ways to preserve their installed base of older cluster controllers during that migration without isolating a portion of their user population from its benefits.

Split market IBM

The IBM 3174 still trails the 3274 in popularity after almost five years on the market

Total U.S. sites surveyed 8,804

3274	Model	3174
May 1977	Introduced	May 1986
36,160	Installations	33,027

Source: Computer Intelligence

Mellon Bank Corp. is one such company. Many of the bank's own branches, as well as client banks that use Mellon's data services, want to migrate from dumb terminals, bisynchronous connections and "obsolete controllers" to PC LANs, according to Dale Davin, Mellon Bank's systems vice president of telecommunications.

The benefits of such a move include potentially significant line cost savings, because it would permit all of a site's communications to Mellon over a single T1 link, Davin said. Right now, such sites send transmissions over low-speed links between individual cluster controllers and the bank's data center.

The problem is that many users want to "take advantage of the new PC applications while still preserving their current application base," which may run on the older equipment, Davin said.

Easing migration

Mellon Bank is looking at the Systems Network Architecture Network Access Controller for Token Ring (SNAC/TR) from Sync Research in Irvine, Calif., as a way to ease the SNA migration path for these sites. The device is said to convert transmissions of IBM 3274s, asynchronous and bisynchronous devices to SNA protocols that can run over a Token-Ring LAN and out over a remote bridge to an SNA host. This allows Mellon Bank's users to implement a single LAN and T1 bridge for both their older and newer IBM equipment, Davin said.

Without the $8,000 device or its equivalent, would-be Token-Ring implementors would have to get rid of their older equipment or set up two communications networks: one for SNA devices with built-in LAN support, the other for those without it.

Dollar-Dry Dock Savings Bank of New York is in the process of evaluating SNAC/TR, as well as similar products from other vendors, to provide Token-Ring connections for IBM 4702 and 4732 automated teller machine terminals at its branch offices, according to Robert Greenstein, vice president of telecommunications.

Dollar-Dry Dock hopes to migrate its SNA installation to LANs completely by next year, according to Steve de Maio, first vice president of systems. However, the time frame will be contingent on the bank's finding an acceptable product for interfacing all of its SNA devices to Token-Ring, he added.

The Travelers Corp. is another company that wants to protect its 3274 investment, which still makes up about 40% of its total cluster controller installation, while it migrates to LANs. The company is accomplishing this by implementing multiplexers and routers, which promise to amalgamate 3274 and LAN traffic over the same T1 links, according to Robin Layland, manager of SNA software engineering at the insurance firm. This will allow Travelers to keep its 3274s a while longer and still gain the economies of scale T1 lines offer for LAN interconnectivity, Layland added.

Netware faces problems on Arcnet

BY JIM NASH
CW STAFF

Problems with a Novell, Inc. network driver are vexing some users of Netware Versions 3.0 and 3.1. Novell's Turbo RX Net driver appears to be shutting down networks on Arcnet and those running certain accounting packages.

One company, Azure Technology in San Jose, Calif., is battling both problems as it tries to keep its mail-order business on line. Bert Riley, Azure's systems director, said he has had crashes and near-crashes on an average of once per day since December.

Riley manages a 20-station Netware 3.1 network running on Datapoint Corp.'s Arcnet. He said Azure installed Netware 3.0 in July and had similar problems. Azure is a 3-year-old mail-order house for aviation-related hardware and software.

There are about 7,500 Netware 3.0 and 3.1 networks worldwide running on Arcnet, estimated Steve Meyer, president of Meyer & Associates, a consulting firm in San Ramon, Calif. Meyer said Michelin & Co. Italy and several other of his European clients have experienced similar problems.

"We're having problems with messages at workstations indicating a problem at the server," Riley said. When the server's use peaks between 25% and 40%, server-error messages flash. Riley said that during busy periods, this can happen seven times daily with the network seizing, and the server eventually shutting down.

He said that although the network seizes soon afterward, the server is unaware of the problem. Occasionally, Riley said, the server shuts down when its packet-received buffer count climbs until it reaches its limit for unexplained reasons. "I don't know what the relationship is between the two," he said.

On your own

Novell has "been unable to resolve the problem," Riley said. "They've been helpful, but I don't hear anything back from them. You kind of feel like you're on your own."

Riley said he loaded a new Turbo RX Net driver last week and the shutdowns ceased, but the network also stopped running applications by Great Plains Software, including order entry.

A source close to Novell who requested anonymity said most of the reported problems with Arcnet users have been caused by Turbo RX Net driver.

A spokeswoman for Great Plains Software in Fargo, N.D., said there appears to be a basic incompatibility between the Netware Btrieve record management system and the Turbo RX Net drivers. The incompatibility is corrupting Btrieve files and rendering Great Plains Software products inoperable.

Novell is looking at the relationship between the driver and client version of Btrieve, said Dwight Davis, Novell's director of marketing development products. Davis said driver problems in the past have been specific to individual networks, with no overriding trend. He said the number of reported instances of incompatibility between the two Novell products has been small.

Meyer said Michelin's problems began in December. "The system was crashing like clockwork at 4 p.m." Originally thought to be a faulty disk drive, he said he eventually swapped the Turbo RX Net driver for a third-party driver, and "the problem disappeared."

PC users gain part-time X terminal capabilities

BY JOANIE M. WEXLER
CW STAFF

The infiltration of X Window System-based networks into corporate computing does not necessarily mean that companies must swap out their personal computers for X terminals or full-blown Unix-based workstations.

X server software for PCs is emerging for cost-conscious users who run MS-DOS or Microsoft Corp.'s Windows 3.0 applications locally but who must also occasionally tap into an X-based network. "The software makes for cheap — but not better — X terminals," commented Mike Bassman, an assistant vice president at New York-based The First Boston Corp.

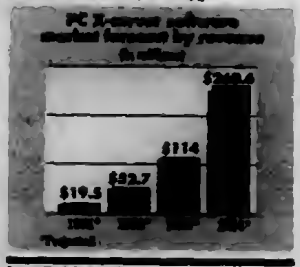
According to Bassman, he is currently replacing hundreds of mainframe terminals with either Unix workstations, X terminals or PC-based X servers. The X server software, he said, is going to PC users who need casual access to the company's internally developed financial applications.

X is a protocol that allows a single desktop device to pull applications from multiple networked computers and display them simultaneously on one screen. X terminals are intelligent, diskless desktop devices specifically designed to access X networks. X terminals also feature high-resolution displays; low-end prices start at about $2,000.

As an alternative, companies can upgrade their PCs with $300 to $500 X server software and integrate them into the X network. While there can be other expenses to the user, depending on what other networking protocols and type of display are already in use, X server software is creating a market that The X Business Group, Inc. in Fremont, Calif., anticipates will grow 300% this year.

X-ccelerating

Many users needing occasional access to an X-based network will protect personal computer investments with a software upgrade



Source: The X Business Group CW Chart: Paul Mock

"What will drive the market is companies' desire to protect their PC investments," commented Steve Auditore, president of the research company. "The user must decide what makes the most sense for accessing X."

For example, Auditore said, X terminals fit into many places where dumb terminals are now used, such as for heavy database access and transaction processing applications.

However, Auditore said, "It's cheaper to upgrade an installed PC with X server software than buy a new X terminal if you're accessing the X network less than 25% of the time."

Continued on page 48

Networked system gives Orange County new image

Probate court's use of optical storage speeds access to legal documents for judges, lawyers, public

ON SITE

BY JIM NASH
CW STAFF

SANTA ANA, Calif. — Trundling baskets of worn case folders may be retired when the Orange County Superior Court probate courts move to computer networks.

Computerization is coming in the form of a networked Filenet Corp. image management system. Lisa Brown, a systems consultant at Filenet, said a pilot project is under way to connect 44 Unix-based Filenet image terminals and 16 servers on a combination of fiber and twisted-pair cabling.

The contents of those folders — 180,000 legal documents — are being transferred to optical discs. When the approximately $1.2 million contract is completed this spring, the disc drives will be tied into the proprietary Filenet network.

The general public, court officials and even judges on the bench will use the oversized image terminals to call up, examine and copy public documents.

Today, said Jeannette Beberia, project manager for the court, a library system is used to distribute the files in turn to the six or more people who either check the files for compliance with the law or refer to them during the proceedings.

"There was a lot of obstinacy [about moving to computers] initially, especially on the judges' part," Brown said. "We were lucky to have a lot of champions in probate."

She explained that although this is not the first time terminals have been installed in the court, it will be the first time terminals will be issued to Orange County Superior judges at their benches. She said there are plans to expand computerization to other courts in Orange County, but she could not say exactly which departments will follow or when.

Beberia said the networked computer system holds many advantages over the old manual system, including multiple access. "Right now, only one person at a time can view files. Right there is a savings in efficiency." Filenet's system will integrate with IBM and Unisys Corp. mainframes already in use by court personnel, she said.

Just as important, though, will be speedier update and entry of files, Beberia said. "Our records will be less prone to misfiling or misplacing."

Rosa Holdeman, a systems programmer at the court and future manager of the image network, said plans now call for an additional 15 terminals in probate. With the added terminals, Holdeman said, all probate employees will have desktop access by the end of the year.

Beberia said the system will be remotely accessible to anyone who purchases Filenet equipment for asynchronous communications. She explained that this is aimed primarily at attorneys.

The network being set up now will have pods of either two or four image terminals linked via fiber-optic cable to a document-entry server.

Filenet requires terminals to use fiber to link with their servers, Holdeman said. Each pod will have a Filenet scanner and printer attached. Both the scanner and printer will have their own servers, Holdeman said.

Behind the scenes

All of this will be linked through Synoptics Communications, Inc.'s Lattisnet System 3000 smart hub to two primary Filenet servers. One server will combine image routing and image indexing services. The second box will house Filenet's Optical Storage and Retrieval (OSAR) Library document storage and retrieval server capable of handling 4 million to 5 million documents.

The routing server will support Filenet's Workflo fourth-generation language application. Among other duties, Workflo will customize document routing and keep an automatic log of documents and who has viewed them.

The index server will have database responsibilities such as tracking case numbers and types of documents. The OSAR server will order the retrieval of documents from Filenet's robotic disc library.

Holdeman said the system will use Lattisnet Model 508 concentrators in the court's telephone room to connect the primary and secondary servers with twisted-pair cabling.

"That allows communications between the two main servers as well as the secondary servers out there," she explained.

The OSAR and routing servers will access the Orange County General Service Agency's shared IBM 3090-200 mainframe primarily to trade information on its case scheduling application.

Each terminal will have Filenet's windowing application to display a host session, according to Holdeman. The probate computers will also communicate via twisted-pair cabling to the county's Unisys 2200/401 mainframe for office administration, word processing and electronic mail software.

BIT BLAST

Racal branches join forces

Racal Data Communications Co. seems to be putting its money where its mouth is regarding the synergy it touts among its five U.S. companies. The Racal firms, each of which is focused on different aspects of the communications market, have reportedly jointly created the Multifunction Communications System, slated for introduction in mid-April, according to a **Racal-Milgo** spokesman. The product is said to combine the expertise of all the Racal companies, including fast-packet, circuit and X.25 packet-switching technologies; cooperative processing; remote bridging; security and bandwidth management; and gateway functions.

The box will reportedly be sold by a common sales force. The spokesman said there is talk that the five companies will drop their individual names to fall under the Racal Data Communications umbrella. As fallout from the consolidation, internetworking company **Racal Interlan** acknowledged that it has reduced its work force by about 7%.

Electronic mail vendor CC:Mail, Inc. — recently acquired by **Lotus Development Corp.** — said it has made a technology acquisition of **Powercore, Inc.**'s Network Scheduler II mail calendaring program. According to CC:Mail, the acquisition is its first move to offer applications integrated with its E-mail product.

Osinet has announced that **IBM** and **Unisys Corp.** are the first computer companies to have successfully tested their Open Systems Interconnect file transfer products and officially registered them in the Osinet Test and Registration database. Osinet, a testing arm of the **Corporation for Open Systems International** in McLean, Va., said the test marked the first formal entry into the Osinet database.

Compex, Inc. has announced that **Computer Brokers of Canada**, reportedly Canada's largest microcomputer hardware distributor, will now distribute Compex's line of Ethernet and Arcnet network interface cards for IBM-compatible personal computers. The distributor will also sell Compex's Readylink entry-level peer-to-peer network operating system for IBM Personal Computer XTs, ATs and Personal System/2s.

Illinois Bell offers ties for alternative carriers

BY ELLIS BOOKER
CW STAFF

CHICAGO — Changing its formerly hostile tone toward the handful of alternative high-speed telecommunications carriers in this city, Ameritech subsidiary Illinois Bell proposed a service last month that would enable these "bypass" networks to interface with Illinois Bell's network.

The proposed Optical Interconnection Service calls for Illinois Bell to place appropriate optical/electrical gear in its central offices, which the alternative carriers would remotely monitor and control. For some time, Illinois Bell fought efforts by private fiber-networking companies for such access, fearing that these unregulated carriers could siphon off business customers.

The tariff proposal follows an agreement with Teleport Communications/Chicago, a unit of Merrill Lynch & Co., to allow the interconnections.

Teleport Communications is one of four fiber-optic network providers in Chicago.

If approved by the Illinois Commerce Commission, the tariff will only be available for interconnection of high-speed digital, nonswitched private line and special access service.

The proposal calls for Illinois Bell to install fiber-optic cables between alternative local carriers and Illinois Bell manholes near three central offices in downtown Chicago. The lines would terminate in the telephone company's central offices, where shared optical/electrical equipment would in turn be connected to Illinois Bell's nonswitched private line and special access tariffed services.

Illinois Bell will limit the opening of its network by specifically excluding the use of the interconnection for private branch exchange or Centrex traffic. The company also said it would not allow resale of switched services and voice-grade circuits. A portion of the charges for the interconnection service will go toward Illinois Bell's common overhead costs.

In an unrelated announcement, Illinois Bell filed a tariff last month for an Integrated Services Digital Network Primary Rate Interface service for customers in the Chicago area.

DG release links Aviion to Novell Netware

WESTBORO, Mass. — Hoping to better integrate personal computers with its Unix-based Aviion server platform, Data General Corp. has announced an open software environment designed to link Aviion servers and PCs across Novell, Inc.'s Netware local-area networks.

The software, designated Open Systems Office/pc.DAA (OSO/pc.DAA) is an MS-DOS package based on Microsoft Corp.'s Windows 3.0 and Hewlett-Packard Co.'s New Wave 3.0 graphical user interfaces.

The product allows PC users to access Unix applications residing on Aviion servers either through terminal emulation or client/server technology, the vendor said. In addition, data residing on Aviion servers can be downloaded for integration into PC productivity tools.

Ann Palermo, director of office systems research at International Data Corp., a Framingham, Mass.-based market research firm, defined the product as "more of an add-on to the Aviion line. The primary market is going to be people buying an Aviion for a specific application."

The company said OSO/pc.DAA will be available for volume shipment within 90 days. It can be purchased with or without Windows 3.0.

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CORPORATE PC WEEK SATISFACTION POLL

1991 digital review TARGET AWARDS WINNER

BROWNING

Internal Memorandum

TO: Drug Application

FROM: Lab 041B

RE: Product #2298 Clin.

Attached are the clinical trials results fo
FDA submission. We will have results fr
remaining test groups by Friday...two weeks
ahead of schedule!

PC users

FROM PAGE 45

Boeing Computer Services, Inc. in Renton, Wash., has tens of thousands of PCs, according to Brian Corrington, a systems analyst at the firm.

"Boeing has chosen X as a strategic vehicle for interoperability among all our platforms," he explained, "so a lot of our PC users must now access X applications."

Corrington said that since Boeing's Intel Corp. 80286- and 80386-based PCs have not yet depreciated, for users with "pretty simplistic X applications, we just toss on a $300 X server."

He also explained that "if users are more X oriented and want to access a few DOS applications, we put them on an [IBM] RISC System/6000 with a PC Simulator."

Integration headaches

Cost savings with PC X server software, however, may be offset by some integration headaches on the part of the user. These can include having to buy a higher resolution display card and networking software that is compatible with that provided by the X server software vendor.

Tim Fisher, a project engineer at the National Aeronautics and Space Administration's Johnson Space Center in Houston, has been trying to get his PC server software running for about one year.

Fisher said that when he invested in his $500 X11/AT PC X server software from Integrated Inference Machines, Inc., he did not realize the software was limited in the number of Transmission Control Protocol/Internet Protocol implementations with which it would interoperate.

"So now I have to go spend $400 on software from FTP Software, Inc., though it still winds up cheaper than buying an X terminal," Fisher said. He added that he was fortunate his PC already contained a 1,024- by 768-pixel display card, or he would have had to foot the bill for a display upgrade.

"If your PC is not powerful, the PC X server upgrade is more dubious. You could get poor performance, and your display resolution might not be all that great," said Fisher, who runs a 25-MHz, Intel 80386-based PC.

As a designer of image processing hardware, he said, he is looking to access graphics output from Sun Microsystems, Inc., Cray Research, Inc. and Amdahl Corp. high-powered computers, which all run X.

X marks the spot

The major line of demarcation between the handful of PC X server vendors lies in whether they supply products designed for MS-DOS or for Microsoft Corp. Windows-based applications.

According to The X Business Group, a research firm in Fremont, Calif., the 1990 PC X server market was dominated 6 to 1 by DOS-based products from Locus Computing Corp., Graphics Systems Software, Inc. and Hummingbird Communications Ltd. The leading Windows product was Xvision from Visionware Ltd., X Business Group said.

However, X Business Group said it expects the DOS-Windows X server software ratio to shift to a 50/50 split in 1991.

Points to ponder when considering X server software, according to Steve Anderson, X Business Group president, include the following:

- Is the software compatible with your graphics package?
- If you upgrade to a higher resolution display, will you have to invest in new drivers?
- Dropping an X server on a user who is accustomed to using DOS can require the user to understand commands for other operating systems (usually Unix) and how the network works.
- Are your existing communications protocols (such as Transmission Control Protocol/Internet Protocol) interoperable with the server software vendor's implementation?

JOANIE M. WEXLER

HP to introduce faster printer

Aiming at a networked office environment, Hewlett-Packard Co. is scheduled to introduce a high-speed laser printer today.

With the addition of a network interface card, the Laserjet IIISI can be placed anywhere in the office; the printer will not necessarily have to be placed directly next to the network server, according to Ormond Rankin, network printer marketing manager at the company.

High-speed printing

The Laserjet will print 17 page/min if the output is primarily text-based. With the interface card, it can also print that fast if the output is graphics, according to Rankin.

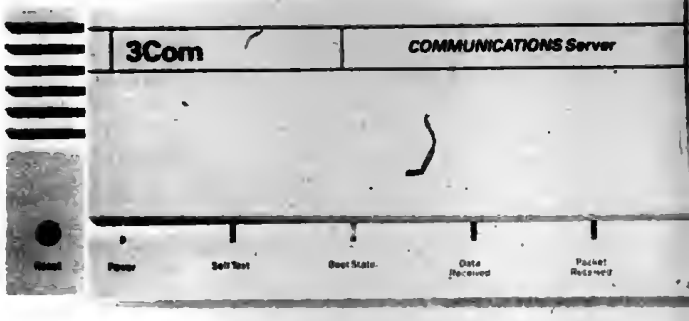
It is the first HP printer to be powered by a reduced instruction set computing processor, the Advanced Micro Devices, Inc. 2900.

The printer is directed at personal computer-based networks. However, according to Rankin, the printer will "generally" work on a Unix or workstation network.

The basic Laserjet printer is priced at $5,495, according to the vendor.

In addition, an Ethernet interface card is priced at $695, and a token-ring interface card is priced at $795.

It's never met a pr



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NEW PRODUCTS

Local-area networking hardware

Fibronics International, Inc. has introduced a line of interfaces that connects Ethernet and token-ring-based personal computers and workstations via unshielded or shielded twisted-pair wiring, coaxial cable or fiber-optic cable.

The interfaces were designed for networks that migrate from one type of architecture to another via diverse wiring and cabling protocols, the vendor said.

Pricing begins at $1,595.

Fibronics International
Communications Way
Independence Park
Hyannis, Mass. 02601
(508) 778-0700

Synoptics Communications, Inc. has announced a managed 10Base-T Ethernet concentrator designed for small or mid-range Ethernet networks.

The Model 2810 Managed 10Base-T Workgroup Concentrator features 12 unshielded twisted-pair ports for workstation connections and one attachment unit interface interconnect port. An optional local-load, or self-booting, feature enables the product to be controlled from a remote site.

The product is priced at $2,395, and a version with the local-load option costs $2,595.

Synoptics Communications
4401 Great America Pkwy.
Santa Clara, Calif. 95052
(408) 988-2400

Gigatrend, Inc.'s *Masterdat can store up to 4G bytes of network data*

Gigatrend, Inc. announced Masterdat, a digital audio tape drive designed to back up network file servers and local disk drives at 35M byte/min.

The drive, which is connected to a network node instead of a file server, can reportedly distribute file backups from all network nodes while retaining central control over backup resources.

Masterdat can also be configured with Novell, Inc. Netware 286, 386 and Portable Netware. The drive is available in 1G-, 2.5G- and 4G-byte models that are priced between $5,000 and $10,000.

Gigatrend
2234 Rutherford Road
Carlsbad, Calif. 92008
(619) 931-9122

Micro-to-host

Cleo Communications has unveiled the 3270 Linkix, a Unix-to-mainframe connectivity product that is available in coaxial and remote versions.

The product provides Unix systems users with IBM 3270 emulation via a coaxial board or allows up to 254 remote users to be simultaneously connected to a mainframe via Systems Network Architecture/Synchronous Data Link Control.

Pricing for the coaxial version ranges from $995 to $1,695, depending on mode of software purchased. The remote version costs $1,695.

Cleo Communications
3796 Plaza Drive
Ann Arbor, Mich. 48108
(313) 662-2002

Intersoft Systems, Inc. has announced Concourse, an IBM Personal System/2-based software system designed to connect an IBM mainframe or mid-range host with bar-code readers, radio frequency terminals and handheld computers.

The product includes an IBM Artic/2 Adapter, a communications coprocessor that enables up to 100 devices to be concurrently connected to a host.

Icons can be used to represent system processes and hardware devices to create an object-oriented environment for producing data collection software applications.

Pricing for Concourse begins at $10,000.

Intersoft Systems
3260 Pointe Pkwy.
Norcross, Ga. 30092
(404) 242-9562

Electronic mail

Beyond, Inc. has announced Beyond Mail, a rule-based electronic mail application designed to analyze the contents of incoming messages, refer them to co-workers or automatically store them in folders.

The product includes Novell, Inc. and Action Technologies' Message Handling System (MHS), a standard E-mail system for Novell's Netware- or Microsoft Corp. LAN Manager-based local-area networks, and features interoperability with other MHS-compatible E-mail products.

Pricing for single-user and eight-user versions is $250 and $1,395, respectively.

Beyond
38 Sidney St.
Cambridge, Mass. 02139
(617) 621-0095

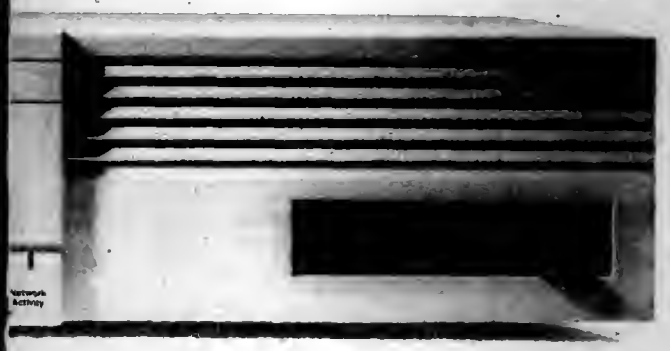
Microsoft Corp. has announced a version of its electronic mail system for Apple Computer, Inc. Appletalk networks.

Microsoft Mail Version 3.0 features multiple file attachments that enable users to send files through Microsoft Mail by attaching them to a mail message.

Pricing ranges from $395 for a Microsoft Mail server to $1,349 for a 20-pack Microsoft License Pak Package.

Microsoft
One Microsoft Way
Redmond, Wash. 98052
(206) 882-8080

otocol it didn't like.



well as tailor resource connection options for the user and offer them on a menu.

What's more, you have the option to design the level of network security and restrict access by user, time of day, location and resource.

If it sounds remarkable, it is. But why not call 1-800-NET-3Com and ask for Dept. D5059. You'll find something you and your network are sure to like.

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For further information call 1-800-222-EMC2 ext. L117 (in MA call 508-435-1000; in Canada call 1-800-543-4782.)

EMC²

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MANAGER'S JOURNAL

EXECUTIVE TRACK

Helene Csvany was promoted to director of applications development at **Summit Information Systems**, the information technology subsidiary of Roadway Express, Inc. in Akron, Ohio.

Csvany was most recently manager of distributed systems support at Summit. In her new position, Csvany is responsible for managing the development, implementation and ongoing maintenance of information systems supporting business functions at Roadway.

Csvany joined Roadway in 1979 as a programmer. She teaches at Akron University and holds a degree in technical education from there.

William R. Oakley has been promoted to manager at the IS division of the **Washington Suburban Sanitary Commission** serving Montgomery and Prince George Counties in Washington, D.C., suburb Hyattsville, Md.

Oakley is responsible for data processing, end-user computing and planning. He has more than 20 years of experience in IS.

Oakley holds a bachelor's degree in electrical engineering from Vanderbilt University and an MBA from Loyola College.

The commission also promoted **Jim Spain** to head of the applications software section. He is responsible for mainframe and personal computer applications. Before joining the commission in 1988, Spain was manager of computer applications at the Rouse Co. in Columbia, Md.

Spain has more than 14 years of IS experience. He holds a bachelor's and a master's degree as well as an MBA from the State University of New York at Albany.

Who's on the go?

When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor, Management, *Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

When Ray talks, people listen

SNET's IS head ensures state-of-the-art technology with low-key leadership

BY CAROL HILDEBRAND
CW STAFF

Raymond Fletcher is not what you would call a grandstander. At project demonstrations, he sits in the background like an off-shore fog. At lunch, he lets his lieutenants do much of the talking.

But for such a low-key person, he has managed to push an awful lot of state-of-the-art technology into the business divisions of Southern New England Telecommunications Corp. (SNET), the New Haven-based firm that provides telephone service to most of Connecticut.

Fletcher, general manager of information systems and technology, may not be a table pounder, but he is not shy about making sure his latest and greatest technologies — computer-aided software engineering (CASE), executive information systems (EIS), expert systems and electronic data interchange (EDI) — do more than sit on a back shelf.

Silent leader

His leadership is referred to in the company as the "Ray says" factor. If Fletcher has encouraged a particular project or technology direction, the words, "Ray says" are enough to keep the project on course, according to his managers.

"Sometimes people come in and say, 'Ray, did you say that?' " says James Pitchell, district manager of IS. "But if we didn't take that approach, we wouldn't have half a dozen projects going that now are."

Fletcher wants to make sure that the resources at SNET's Information Technology Center are used as widely as possible. His goal is simple and appropriate: He wants to make information technology "as easy to use as the telephone."

SNET, in business since 1878, has approximately 13,000 employees and posts approximately $1.7 billion in revenue annually. Although the company cannot grow beyond its regulated regional boundaries, that does not stop the IS organization from aiming to be "world class," Fletcher says.

"We're geographically limited, but we're not constrained by the way we do business in our territory," he says.

Fletcher, 59, joined SNET right out of college in what was then network engineering. After a brief stint in IS planning, he moved back to network operations on the customer side of the house and spent 10 years as its head. He switched back to IS as its chief at the end of 1987.

In addition to his traditional IS fiefdom, Fletcher, after a corporate consolidation, is responsible for two business divisions: corporate purchasing and operations budgets and results. The consolidation "made the ideal opportunity to exercise the IS part of the

Continued on page 57

PROFILE: Raymond Fletcher

Position: *General manager of IS and technology, SNET*
Mission: *To help company users tap the value of emerging technologies*

Bechtel loses the paper, wins the prize

BY MITCH BETTS
CW STAFF

It is easy to see why many companies have created sophisticated systems for accounts receivable. Every business wants to efficiently capture income. But San Francisco-based Bechtel Group, Inc. has developed an all-electronic system that makes it easier to pay the bills.

The manual processes involved in paying a corporation's bills are very expensive. So in 1989, Bechtel created what is believed to be the first full service electronic disbursements system.

Converting from paper to electronic funds transfer reduced the cost of making those payments by 80%, according to Bechtel. In recognition of such dramatic cost savings, the National Automated Clearing House Association selected Bechtel's Vice President and Controller V. Paul Unruh last month to receive the 1991 Payment Systems Excellence Award.

Bechtel's system, developed along with First National Bank of Chicago, allows the company to pay bills using any one of four formats: electronic data interchange, automated clearinghouse, Fedwire or check.

Cash advantage

One big financial advantage is that the information system gives Bechtel's treasury a clearer idea of how much cash will be needed to pay the bills each day so it can keep the rest of the company's cash in money-earning investment accounts. Furthermore, the direct-deposit system makes it possible for Bechtel to take advantage of any vendor cash discounts.

As for paperwork, the electronic disbursement system eliminates about 120,000 forms and 200,000 computer printout pages per year. It also eliminates company-produced checks by nearly 100% and reduces costs of issuing remaining checks by 50%.

"Bechtel's payment system approach . . . provides a model for corporations to remove themselves from the burdens of operating an assortment of electronic and paper disbursement systems," said David P. Smay, assistant treasurer at Chevron Corp., in his letter nominating Unruh for the award.

COMMENTARY

N. Dean Meyer

Conflict of responsibilities

Innovation and operations are like oil and water: They don't mix. But in too many information systems organizations, one unfortunate manager, whom we'll call George, is given responsibility for both.

Consider this scenario:

"George, you've really done a great job managing the development of our distributed information systems. I think you're going places around here."

"Thank you, sir!"

"In fact, I'm doing a little reorganizing, and I have a new assignment for you. You know we've been having a bit of trouble getting our minicomputer platforms under control. I'd like you to apply your superb management skills to our distributed systems operations."

"Great, boss! Sounds like a fun challenge. But tell me, who have you got in mind to take over my job?"

"At this point in your career, I think you ought to be able to handle both."

"Uh-hum . . ."

"With the proper head count, of course."

"Um, OK. Sure, boss."

Then, six months later, the following is likely to occur:

"George, can I talk to you?"

"Sure, boss."

"I'm really pleased to see the way the mini operations have stabilized . . ."

"Well, thanks, boss!"

"But I've been getting a number of calls from the other vice presidents complaining of unresponsiveness on the development side. You know how I hate calls like that. I'd like to politely ask: What is going on?"

"Well, sir, I've been working 70-hour weeks to document procedures, get the hot line up to speed and sort out the backup procedures. I've still got a ways to go on change control, disaster recovery and security administration, and I haven't started thinking about capacity planning or remote network management. Meanwhile, half the day seems to go into firefighting! The last thing I need right now is another major application!"

"George, George, George . . . You know we need to do more than keep existing systems running. We've got to get new applications out the door. We need innovation! You've been successful in both operations and development. You've got good people working for you on both sides of the house. Now, what's the problem?"

The problem isn't George. It's the organizational structure. By the nature of his position, George was told to go two ways at once.

An IS department operates a variety of service bureaus, selling computer time, network bandwidth, processed applications, telephone services and end-user computing services such as electronic mail. In each case, the IS function is expected to be the low-cost producer of a reliable, secure and responsive service.

The IS staff is also responsible for innovation in a wide range of technologies: applications development, process automation, platforms from the PC to the mainframe, end-user computing tools and software engineering methods. In each of these areas, the IS staff is expected to deliver world-class excellence.

However, if innovation functions report to operations groups, they find no time for major new projects. Significant innovations threaten the stability and efficiency of operations. If the operations boss is doing his job, he'll see to it that his people slow the pace of innovation.

On the other hand, if operations functions staff members report to an innovation group, the platform will never stabilize. Every new idea will find its way into production whether or not it can be supported.

In either situation, the structure hampers success. Good people may attempt to do what is right, despite their boss' best interests, but even such altruists cannot perform as well as they could in a healthy organization.

I have participated in the restructuring of a variety of IS departments using a systematic approach to identify and coalesce similar functions. In every case, I found instances of structurally created conflicts of interest.

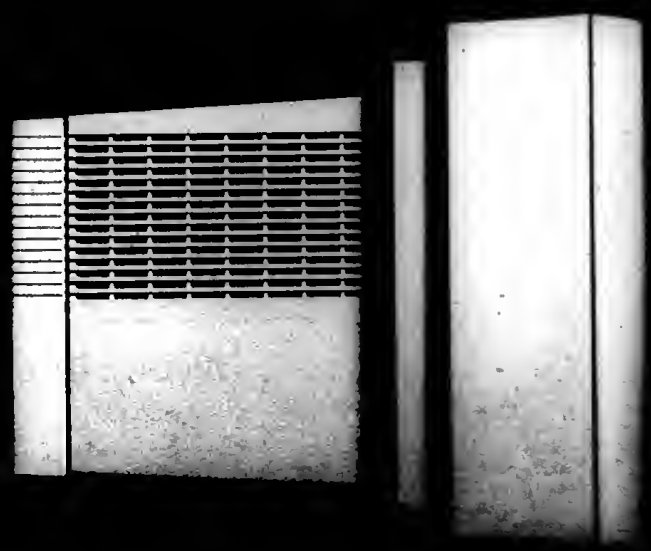
Clearly, the IS department faces conflicting objectives, but that doesn't mean the managers within it must be pulled in paradoxical directions. A healthy structure defines jobs that are responsible for a deliverable product rather than a task without mixing responsibility for innovation and operations. Even in small organizations, responsibilities can be combined to avoid creating impossible jobs.

It is the IS executive's responsibility to build organizations in which people can succeed. The separation of innovation and operations is among a handful of straightforward principles that guide the systematic design of an IS department's organizational structure.

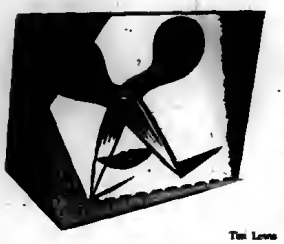
It is an understanding of principles like these that makes the role of chief information officer a job for a real IS professional.

Meyer is founder and president of NDMA, Inc., an IS management consultancy in Ridgefield, Conn.

The PW² LAN Workstation.
attached to.



CLIPS



Tim Lewis

Summaries from leading scientific and management journals

"Of course the service was good. I did it myself!"

By J. Faye Horn, Jerry Kanter and Stephen J. Schiffman

Babson College Center for Information Management Studies Working paper, 1990

■ As the labor pool for retail clerks shrinks, companies will increasingly turn to technologies that allow the customers to perform some transactions by themselves.

A classic example of a "customer-activated transaction processing system" is the automated teller machine. Other examples include check-out kiosks for rental cars, home banking and home shopping on the Prodigy videotext service and point-of-sale systems in which the customer does the scanning.

Customers are willing to use these systems if they perceive benefits (such as faster service) that justify the do-it-yourself effort. Technologies spurring the popularity of these systems include multimedia simulations, smart cards, touch screens and devices that can read handwriting or respond to voice commands.

Expert systems, for one, can be deployed to help customers handle more complex buying decisions. The Otis Elevator Co., for example, provides its customers with software for selecting, ordering and scheduling the construction of elevators. — *Mitch Betts*

"Even closer to the customer"

By Rosabeth Kanter

Harvard Business Review January/February 1991

■ The twin peaks of customer service — meeting customer requirements and fixing problems — are being joined by a third element, innovation. Innovation is the way customers change the business.

Through the use of technology, customers are entering the internal business process in unprecedented ways. Customer choices direct production. Customer feedback drives product development. Customer communication creates membership groups.

By meeting the following challenges, businesses can get even closer to their customers, ensuring an innovative partnership:

- Understand who the customer is. A customer-oriented company understands and involves the whole "customer system" — from product user to product buyer — because each portion of that system influences the other.
- Turn customers into members. Involving customers in innovation requires forums such as user groups and clubs that foster communication with the company.
- Make customers real to all employees. Find ways to get employees in contact with customers.
- Use data to benefit customers. Technology-garnered customer information enables customization, supplier/consumer dialogues and feedback. Using this data, the most advanced customer companies find out what customers need before they realize they need it.
- Keep promises by championing change. Service guarantees work only if service and work are linked to other aspects of a company's strategy. If they are not, then your customer relationship is at risk. For example, a major computer company pledged to find the best system for a customer, regardless of vendor. Yet it continued to reward its sales force on whether it sold the company's products. This reinforced noncustomer-oriented behaviors. — *Lory Zottola*

"Commercial use of expert systems in the U.S."

By A. Ansari and Batoul Modarress

Journal of Systems Management December 1990

■ A recent survey of 175 members of the Association for Systems Management found that 70% of responding companies have an expert system in place, and 30% are considering the possibility.

Expert systems benefits include better and faster decision-making by nonexperts, savings in operational costs and more readily available information sources for decision makers, the respondents said. Problems include a lack of qualified knowledge engineers and expert systems designers as well as high development costs and lack of top management commitment.

Yet some of these limitations can be overcome. By increasing awareness and available training needed to develop knowledge engineers, the pool of available resources will increase, which makes expert systems much more attainable. — *Jodie Naze*

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Protection of Investment

Open systems protect user's investment in information systems, data and training. Industry-wide support for open standards helps guarantee compatibility of existing open products with future ones and compatibility of one vendor's offering with another's.

Faster Time to Market

Open Systems help end-user companies respond to market opportunities more quickly. Open systems lead to the Computer-Integrated Enterprise where information can flow easily between functional groups (e.g., engineering and manufacturing) reducing the time it takes new products to go from idea to reality.

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- In-house software development and maintenance costs are lower because the same software can run on multiple platforms without modification. Software costs are also lower through growing availability of purchased software packages.
- Training costs are reduced through consistency of software regardless of the underlying platform
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The ability to use or migrate, application software, systems software, data and/or people across different computing platforms from multiple vendors.

WHAT OPEN SYSTEMS ARE BUILT ON STANDARDS

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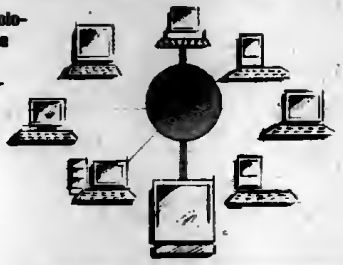

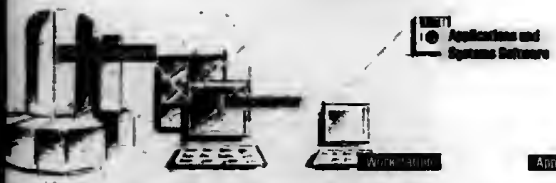

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CALENDAR

MARCH 24-30

Computers, Freedom and Privacy Conference. Burlingame, Calif., March 25-28 — Contact: CFSR, Palo Alto, Calif. (415) 323-3778.

Fiber Optics Conference. Lexington, March 25-29 — Contact: Jennifer Kady, Information Gatekeepers, Boston, Mass. (617) 232-3111.

Making the Investment in Imaging. Marlboro, Mass., March 26 — Contact: Monica Falzone, AGS, Wakefield, Mass. (617) 438-0680.

The Software Solution Show and Conference for Manufacturing and Distributing Businesses. Toronto, March 26-27 — Contact: Alwyn Mitchell, Software Matchmakers, Willowdale, Ont. (416) 756-3221.

Quick Response '91. Nashville, March 26-27 — Contact: Quick Response '91, Pittsburgh, Pa. (412) 963-8588.

DB/Expo '91. San Francisco, March 26-28 — Contact: Norm De Nardi Enterprises, Los Altos, Calif. (415) 841-8440.

MARCH 31-APRIL 6

The Information Systems Security Association Conference. San Diego, April 1-5 — Contact: Richard Rueb, Irvine, Calif. (714) 854-5500.

Network Analysts Users Group Meeting. Vail, Colo., April 1-5 — Contact: Sandy Moretto, NAUG, Menlo Park, Calif. (415) 688-2700.

The Global Economy: Implications for Telecommunications Policy and Management. Los Angeles, April 4-6 — Contact: Matthew Berndt, Center for Telecommunications Management, Los Angeles, Calif. (213) 740-0980.

APRIL 7-13

Corporate IPT/Financial EDI Conference. Chicago, April 7-16 — Contact: University of North Carolina Business School at Chapel Hill, Chapel Hill, N.C. (919) 962-9630.

Focus on Operations XI. Las Vegas, April 7-11 — Contact: Computer Operations Management, Orange, Calif. (714) 997-7966.

IEEE International Conference on Robotics and Automation. Sacramento, Calif., April 7-12 — Contact: Robotics and Automation, Boca Raton, Fla. (407) 483-3037.

Service Trends Conference. San Francisco, April 8-9 — Contact: Lori' Larsen, Ledgeway/Dataquest, Lexington, Mass. (617) 862-8500.

Information Security Managers Symposium. Chicago, April 8-10 — Contact: Pamela Bassett, MIS Training Institute, Framingham, Mass. (508) 879-7999.

Loop Implementation: The Next Steps. Monterey, Calif., April 8-10 — Contact: Electronicast, San Mateo, Calif. (415) 572-1800.

Turning Audit Costs into Profits: Superstrategies for the Internal Audit Department of the 1990s. San Francisco, April 8-10 — Contact: Pamela Bassett, MIS Training Institute, Framingham, Mass. (508) 879-7999.

Computers and Software for Manufacturing Expo. Chicago, April 8-11 — Contact: Doug Kunz, Cahners Exposition Group, Stamford, Conn. (203) 352-8202.

National Design Engineering Conference. Chicago, April 8-11 — Contact: National Design Engineering, Stamford, Conn. (203) 964-0000.

Business Re-engineering Forum. Cambridge, Mass., April 8-12 — Contact: Margaret Murphy, Computer Sciences Corp. Exchange, Cambridge, Mass. (617) 499-1227.

The Conference Board Information Management Conference. New York, April 9-10 — Contact: Conference Board Registrar, New York, N.Y. (212) 339-0290.

Seybold Technology Forum. Cambridge, Mass., April 8-11 — Contact: Deborah Hay, Seybold Computing Group, Boston, Mass. (617) 742-5200.

The Software Development Management Conference. San Francisco, April 8-12 — Contact: Software Development Conferences, San Francisco, Calif. (415) 995-2471.

Supercomputer Conference. Newport, R.I., April 8-12 — Contact: John Miguel, Federal Information Processing Council, Middletown, R.I. (401) 841-4591.

Society for Information Management 1991 Institutional Member Conference. Tucson, Ariz., April 10-12 — Contact: SIM, Chicago, Ill. (312) 644-6610.

Unix Challenge 1991. Tyngsboro, Mass., April 10-12 — Contact: Andree Fontaine, Boston University, Corporate Education Center, Tyngsboro, Mass. (508) 649-9731.

APRIL 14-20

Congress on CIM Databases. Cambridge, Mass., April 14-17 — Contact: Wilma A. Hurwitz, CAD/CIM Alert, Boston, Mass. (617) 232-8080.

International Technical Communication Conference. New York, April 14-17 — Contact: ITCC, Thornwood, N.Y. (914) 742-5999.

Information User Association: Architecting for the '90s. Salt Lake City, April 14-16 — Contact. IUA Headquarters, Chicago, Ill. (312) 644-6610.

Nustec 3.0. Atlanta, April 14-19 — Contact: Dave Cochrane, National System Programmers Association, Milwaukee, Wis. (414) 423-2420.

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Ray talks

FROM PAGE 51

operation," he says.

Flexing IS muscle resulted in the implementation of EDI in the corporate purchasing department, where about 40% of invoices are now processed electronically.

The Budgets and Results Division went on-line with an EIS in 1988. Operations managers now get daily updates on critical indicators and operational performance.

"Ray [Fletcher] has a way of challenging his people to expand their horizons. He encourages them to work in sort of a green-light mode."

ROBERT F. NEAL
SOUTHERN NEW ENGLAND TELECOMMUNICATIONS

"I use it every Monday morning automatically," says Robert F. Neal, senior vice president of operations. "It gives me a quick, top-down view of 15 critical measures. I also get the preliminary results much faster than I used to, by about a week and a half."

Once these systems got the green light, the Information Technology Center was aggressive about making sure they were used, putting together a development support center to help users over the hurdles.

In 1989, Fletcher required staff managers and technical lead analysts in his divisions to receive technical training in EDI, CASE and expert systems. "Every manager had it written in their objectives that they had to go take that training. That's the kind of approach we use when we want to make things happen," Fletcher says.

Fletcher also encourages IS employees to study the latest technology. If an idea is approved, he gives them a lot of autonomy to make it work.

"There are two ways to run a group like this," he says. "One is, you can motivate your talent. You can set stretch objectives and encourage them to follow through. The other way to run it is as if you had a flock of sheep. If a sheep runs off, you take that staff and bring him back. I'd say that we use the first style."

Neal agrees. "Ray has a way of challenging his people to expand their horizons," he says. "He encourages them to work in sort of a green-light mode."

Pitchell also likes Fletcher's style. "Ray has allowed us to go out and bring back ideas," he says. If Fletcher likes the idea, Pitchell says, he'll put considerable backing behind the project. Such was the situation with CASE. After a pilot program in 1989, the center has increasingly used the tools for systems development.

Fletcher says he gave the developers freedom to pick the tools they really wanted to work with, but what they picked was "going to become a standard, and we were going to use it." SNET uses Texas Instruments, Inc.'s Information Engineering Facility in conjunction with two relational databases, IBM's DB2 and Computer Corporation of America's Model 204.

CASE has produced real results for SNET. Thus far, several applications developed using these tools are already in use in marketing and business services. There was some initial reluctance, according to Pitchell, "but now we can put things together [quickly] that would normally take us weeks or months. Even the veteran programmers say 'God, how did I ever do it in the old Cobol way?' "

Staying in the technological vanguard has resulted in some mistakes, but Fletcher considers them part of the process. "I don't mind making mistakes. I just don't like stupid mistakes," he says.

For example, he thinks that buying IBM's expert systems shell was probably not the best decision. "We tend to be an IBM shop, and we like the support, so we purchased their shell," Fletcher says. "It might not have been the best available product." But Fletcher says he wanted his staff to get immediate experience with expert systems rather than spending time wavering about buying.

Information soapbox

SNET also campaigns heavily to let the typical user know what options are available. The IS group has designed an account manager system in which each of the four major groups in SNET — operations, finance, marketing/sales and human resources — has a team dedicated to it in the technology center. Each team is headed up by an IS division manager.

"I think as a result, the business managers see the center as more of a helpful support organization than as corporate overhead," Neal says.

To help showcase specific technologies, the group has put together a couple of projects. One is the technology display center, a room that has been fitted with an array of the hardware and software that SNET uses. Account managers can use the room to pitch different applications.

The center has also sponsored a series of expositions to broaden knowledge about computing. The shows feature technology from a specific vendor or from internally developed applications.

This style of well-researched decisions backed by full-speed implementation has paid off. "You can always say, 'Well, I'm going to wait six months for something new that will be a little better.' You can take that and just go forever," he says. "You have to be progressive but keep an eye on the world around you."

A silent boardroom?

The new darling at SNET's Information Technology Center is the decision support center — the first licensee of IBM's Teamkit/2.

Teamkit creates an electronic meeting in which all communication is done on-line and anonymously. The meetings are silent, speedy and brutally honest. "You generate more ideas in 10 minutes by everybody keeping quiet," says Raymond Fletcher, general manager of IS and technology.

The room is made up of a dozen or so personal computers placed on a horseshoe-shaped table and hooked via local-area network to a server. Meetings are run by a moderator, and ideas and responses are flashed on a large projection screen at the front of the room. Users can scroll through answers to a question and add their own comments to the ideas that have been generated.

The process cuts through the corporate politics that can frequently hamper meetings. For example, SNET has used Teamkit to reorganize its desktop publishing technology, which is spread throughout three divisions.

Fletcher says that after one day, a group of managers from several different levels of the company had come up with a set of goals and an action plan that was implemented within a month.

Without the electronic boardroom, "we probably could have been meeting for a month trying to get these people to break down turf thinking," Fletcher says. "On a keyboard, a [lower level] person can say 'That's a dumb idea' without being intimidated."

CAROL HILDEBRAND

MANAGEMENT BRIEFS

Index opens Chicago, San Francisco offices

Information technology consultancy **Index Group, Inc.** will open offices in Chicago and San Francisco next month. The Chicago office, to be headed by Index Vice President Robert A. Dantowitz, will initially have 16 consultants. The San Francisco office, opening with eight consultants, will be led by company Vice President Frank A. Petro.

In addition to its Cambridge, Mass., headquarters, Index currently has offices in Los Angeles and London. Both new centers will focus on business re-engineering consulting. A subsidiary of Computer Sciences Corp., Index has about 200 consultants worldwide and annual revenue of more than $50 million.

An association has been formed for professionals involved with electronic data interchange and electronic messaging technologies. The **Certified Electronic Trade Professionals Association** is accepting membership applications for full members, associate members and students. The association can be reached at P.O. Box 200906, Suite 809, 2410 Hollowridge Lane, Arlington, Texas 76006 or (817) 640-6059.

A recent survey of 88 midlevel managers at companies in the traffic-plagued San Francisco Bay area found that they expect telecommuting to grow significantly over the next two years. In the survey, 41% said they expect the number of telecommuting workers to grow by 10% to 15%; 20% predicted an even bigger increase of 20% to 25%. None expected a decrease.

The survey defined a telecommuter as an employee working at home two or more days per week. The survey was conducted last fall by the **Northern California Telecommuting Advisory Council** and was sponsored by the **University of San Francisco** and **Pilot Group**, a marketing firm in Novato, Calif.

The weak construction and building market has made architectural and engineering computers more important to operations, according to a majority of attendees at the recent **Architecture, Engineering and Construction Expo** in New York. Sixty percent of those surveyed said computer systems are more important in the current economic climate, 29% said there was no change, and only 1% said computers have become less important. The survey also revealed that architecture and construction firms plan to put an average of 15 more computer users on-line in 1991.

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Gambling on a promise

Exploring the real, and not so real, capabilities of the Windows interface

Richard A. Goldberg

BY PETER BARTOLIK

Windows and I became acquainted with the advent of Version 2.03. Running on a slow Intel Corp. 80286-based system with Color Graphics Adapter graphics, it held some novelty as an introductory DOS shell with rudimentary file management capabilities that made it quick and easy to maneuver around the hard drive.

With the release of Version 3.0, it was obvious that Windows had become more than just a DOS shell, even when used on a 286 machine with 1M byte of memory. It was just as obvious, however, that little improvement had been made to its file management capabilities. With the arrival of an 80386-based system with 4M bytes of memory, the world of limited multitasking and extended memory management opened up.

The faster machine was brought in for purposes other than using Windows, so any cost-benefit analysis would be faulty. On a subjective basis, once you've taken a shine to the graphical user interface Windows has become, it's not pleasant to imagine going back to a work life dominated by the C:> prompt.

But the impressions of a late-blooming personal computer enthusiast do not justify a business investment.

In this special report, we try to move beyond the hype and counter-hype of the Windows/non-Windows, Windows/Macintosh camps and explore the real benefits and costs of adopting Windows in user environments. We also detail the practical shortcomings of today's Windows and map out what Microsoft Corp. will do (and when) to provide features that are lacking.

Our reporting team interviewed managers responsible for evaluating and implementing Windows in their organizations. Experiences range from early evaluations by some firms to a law firm that has retired thousands of dollars of Wang Laboratories, Inc. minicomputers in favor of local-area networks serving Windows-equipped PCs (see story page SR/2).

Telephone interviews with 40 IS professionals (see story page SR/9) who were asked to rate Windows' performance on the job generated high marks for Microsoft's delivery of what it promised. Yet, users are quick to point out areas in which Microsoft needs to improve.

Windows has clearly made its mark across many vertical industries, and we've selected seven companies in various segments to find out how the product is paying off in the workplace.

And what about OS/2? The one-time successor to DOS seems, in the wake of user confusion over Microsoft's and IBM's intentions, to have been relegated to a niche role for in-house development of mission-critical applications. Even once staunch OS/2 advocates concede that Windows is likely to become the corporate computing standard.

But Windows, however, may not be the only standard. Graphical user interfaces for Unix are eroding some long-standing fears of the complexity of that operating system. Moreover, the Unix star seems to be rising in the server market, particularly as OS/2 wanes. And there are alternative DOS interfaces that users swear by, particularly for older systems.

Lastly, to provide more insight into what Windows may become, we've pulled together a recap from recent months of what independent software developers have introduced in a bid to improve on the features of Windows and create new applications that leverage the graphical user interface.

No argument can derail the fact that upgrading older machines to use the full capabilities of Windows is expensive. Tallying up $150 or more for memory plus $400 or so for an enhanced graphics card and monitor adds up to more than $55,000 for 100 machines, $500,000 for 1,000 PCs. But if you have to buy new machines anyway, the $2,000 to $2,500 cost of 386SX-based clones makes it easier to go with the flow.

Only you can make the decision whether the Windows investment is worthwhile. The examples, insights, criticisms and alternatives offered on the following pages are intended to help guide that decision. ●

Bartolik is *Computerworld*'s news editor.

A LOOK INSIDE

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Windows is winning over many a manager, even those that once thought OS/2 was the way to go
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IS makes Windows work

Many users are finding room for the new interface in the workplace — warts and all

BY JAMES DALY

Down the hall from Katherine DeBruyn's office in the Seattle-based law firm of Perkins Coie is a data center containing tens of thousands of dollars worth of Wang Laboratories, Inc. VS minicomputers. A year ago, the machines pumped informational lifeblood to more than 600 terminal-equipped attorneys, paralegals and secretaries. Today, they are silent, enormous paperweights in a glass-walled tomb.

The execution order for the minis was written last May when DeBruyn, Perkins Coie's MIS director, opened a blue and white box no larger than a telephone book. Inside was Microsoft Corp.'s newly released Windows 3.0, the graphical environment that replaces the bland DOS command line with a mouse and on-screen icons offering point-and-click simplicity. "Once we got a peek at Windows 3.0, we knew we had to build a system around it," DeBruyn says.

DeBruyn, whose million dollar make-over will see the Wang machines replaced with a local-area network of personal computers running Windows, is not alone. Since its introduction last May, the graphical user interface has become more than just another pretty face — it has become an impetus for dramatic change. "We're shifting all our processing from the mainframe down to desktop PCs and using Windows to access that information," says Dale Smith, a program manager at General Electric Co. in Schenectady, N.Y.

Analysts say Windows' initial flush of success should continue and that within a few years, more than half of all DOS users will have it. Why has a 5-year-old package in its third incarnation suddenly become an overnight sensation? Users say that Windows 3.0 exorcised many of the problems of earlier versions, including the 640K-byte memory limitations, the antiquated command-line prompts and the chore of copying files from one directory to another. "The difference between the old and new is like night and day," says Laura Hill, vice president of product management at Information Science, Inc. in Montvale, N.J.

Despite their enthusiasm, many users also realize Windows is not glitch-free. George O'Blander, a systems analyst at Bank of America in San Francisco, says Windows is often very slow, particularly in compute-intensive programs. "It's geared for the entry-level user more than anything else," he says. "Sometimes it's so frustrating that I'll just go back and type in DOS prompts."

Many also still grumble about the extra horsepower the new platform needs to perform adequately: an Intel Corp. 80386-based PC with 4M bytes of random-access memory and an IBM Video Graphics Array monitor. Officially, Microsoft says, Windows can run on a lot less, but users know better. "Try running Windows on a 286 and it's like mud," Smith says.

Randy Lyhus

"It winds up doing so much memory swapping to the disk that performance becomes unacceptable," another systems analyst says. "Every once in a while, we'll get an application that just freezes up, usually during multitasking or when we're switching between applications."

Windows enthusiasts claim such criticism is akin to carping about a Porsche because the cigarette lighter doesn't work. But there's another rub: You first have to be able to afford the Porsche. In recessionary times, many firms are hard-pressed to undertake a widespread upgrade that could end up costing $1,000 per Intel 80286-based PC user.

Widespread reports of Windows-based memory management and communications difficulties also have users doing some financial and psychological adjustments before they even break the shrink-wrap on the package.

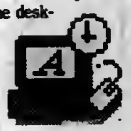
"You need to implement Windows with the understanding that there are memory management problems. But if you address them properly, it can be a very smooth installation," says David Gusman, a systems officer at Society Corp., a $15 billion regional bank holding company in Cleveland.

> "The difference between the old and new is like night and day. It's sometimes hard to believe they're the same application."
>
> Laura Hill
> *Information Science, Inc.*

When those rough edges are smoothed, the result will be that PC users can finally understand why Apple Computer, Inc. enthusiasts have raved about the screen appearance of the Macintosh for years. Windows has achieved that goal while still abiding by one of the information systems manager's central tenets: To be optimally productive, technology should be virtually invisible. "Windows has become a rallying point for us," says William Conley, manager of information technology service at Loral Aerospace Corp. in Newport Beach, Calif. "It's where we can go for consistency."

Because Windows allows DOS users to maintain the warm comfort of a familiar operating environment, it has also acted as a slow poison on the other heart that beats within the chest of Microsoft: OS/2. Windows has breathed new life into DOS, casting doubt on the role OS/2 and Presentation Manager will have on the desktop.

Some managers remain committed to OS/2 for high-end applications and as a server operating system, however.



The allure of Windows has also seeped into Unix camps. "Before Windows 3.0, I would have to be dragged into the DOS world kicking and screaming to learn DOS commands," says Ralph Redfern, a senior technician and Unix user at AT&T in Denver.

Windows has also proven helpful in bridging DOS and Macintosh applications, which typically require plenty of personnel, careful network implementation and file conversion schemes. At Du Pont Co., for instance, thousands of IBM personal computers and Macintoshes interact — the result of a policy that allows many users to pick their own computer. Such an arrangement, however, can bring with it a Pandora's box of compatibility problems. Previously, Macintoshes and PCs were both tied to the host mainframe, and off-the-shelf file transfer utilities allowed users to move data between the two computer worlds.

Now Du Pont users are seriously looking at Windows versions of Macintosh applications. Transferring files between Microsoft's Word for Windows and Word for the Macintosh is easier than between the PC and Macintosh versions of Word. "With Windows, you get 90% of what you get on a Mac, so bridging the gap between the two is going to be a lot easier," says Robert McPhee, a senior engineer at Du Pont's imaging systems department.

Progress isn't cheap

Users on the migration path, however, warn that the cost of large-scale migration is not insignificant. Neither is the need for supplemental support resources to minimize temporary declines in user proficiency.

Although Windows 3.0 is still a freshman, many agree that it has affected the computer industry like few packages before it. Many users are well beyond the evaluation stage, and with the arrival of Windows versions of Lotus Development Corp.'s 1-2-3, Wordperfect Corp.'s Wordperfect and Ashton-Tate Corp.'s Dbase later this year, Windows will have built up a full head of steam. "Windows has fundamentally changed the way we do business," DeBruyn says. "I can't think of many products, let alone software applications, that can make me say that."•

Daly is a *Computerworld* West Coast senior correspondent.

Hard benefit tough to figure

BY MICHAEL L. SULLIVAN-TRAINOR

When Roy Wilsker decided to acquire Microsoft Corp.'s Windows 3.0, he knew it would cost him $1,000 to $2,000 per personal computer to add the memory and faster CPU required. What he didn't know was how much Windows would save — and he still doesn't.

"The costs are very hard, but the benefits are much softer," says Wilsker, manager of end-user services at Kendall Healthcare Products Co. "If you give users an extra 10 minutes for every hour they work, what are they going to do with that time?"

Approximately 15 Kendall users are experimenting with Windows now, and 50 to 75 of the company's 180 employees will eventually be brought on-line.

Implementation lags

Less than one year after Windows 3.0 was released, managers are struggling with ways to quantify the benefits. Their difficulty is not preventing Windows purchases, but it may be slowing implementation.

In an effort to generate hard cost/benefit figures, Microsoft and Corporate Software, Inc., a Windows systems integrator, conducted a 14-company pilot project. The companies found that Windows increased their PC support requirements 10% in the first year. In addition, they reported the need for 20 to 30 hours of initial training. The companies had assumed they would replace Intel Corp. 8088-based PCs with 80286-based machines. Instead, they are bringing in 80386s for Windows.

Martin Marietta, Inc., a beta-test site, has about 1,000 Windows users. The firm paid $100 per package and $50 for each additional 1M byte of memory. Training costs were not a significant factor, says Steve Birgfeld, manager of the product evaluation center, because users already run Apple Computer, Inc. Macintoshes, and the applications have been ported over.

The expected benefits of Windows include running multiple applications and turning out better presentations, Birgfeld says. Although he has identified a 30% increase in throughput, he says it's too early to tell what the hard benefits will be.

While much attention has been focused on increasing the productivity of individual users, Windows is also being used in networking applications. "We are front-ending a Novell, Inc. network with Windows. It's an arduous task," says Mark Petry, a network specialist at Price Waterhouse Technology Center.

Although Petry's group didn't perform a cost/benefit analysis because they act as a research and development facility, he estimates that the installation cost more than $5,000 per user, including network costs. There are about 50 users on the network.

"There are definite payoffs," Petry says. "You're not running a third- or fourth-party menu system to front-end the LAN. The integration of subsequent applications from a graphics and memory management standpoint is much easier."

However, there is a price to be paid. Windows requires that users install its memory management on every machine in the network to support virtual memory features, Petry says. In addition, it took Petry's group a lot of time to set up a matrix combining the hardware configuration files with the users' needs.

The key to success, Windows installers and researchers say, is to plan ahead:. Pick an application that management strongly supports for Windows, then set realistic expectations. "Don't think you can install Windows for a total of $49.95," Petry says. "It's not a slam dunk." ●

Associate Editor Cathleen A. Duffy contributed to this report.

Sullivan-Trainor is a *Computerworld* senior editor, features.

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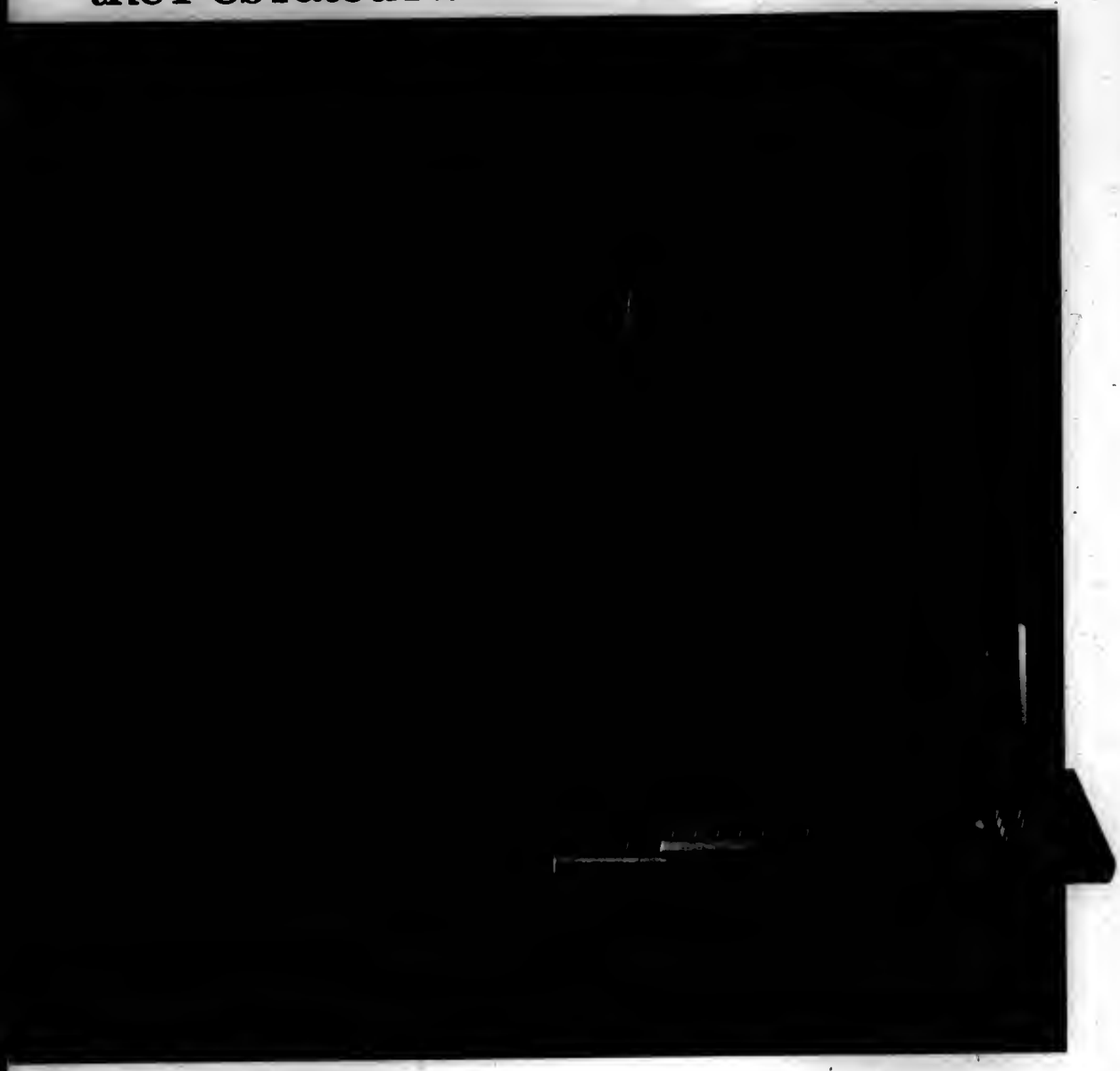

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Current needs, future promises

Windows users' wish list of improvements includes faster speed and font technology

BY MICHAEL FITZGERALD

While some users think Windows is good as it exists now, others are not shy about saying how Microsoft Corp. might put a brighter shine on its graphical user interface.

Frank Reidelberger, manager of information systems development at Northern Telecom, Inc., says Microsoft needs to start by applying some Windex and elbow grease to what he calls "deficient areas" in the program's core.

"They need to improve font technology," Reidelberger says. "Right now, you've got to go to the third-party market [to get good type management], so if it's part of the system itself, that would be an improvement."

Reidelberger says he would also like to see the system contain better dynamic data exchange, as well as an integrated program and file manager. His final system add-in would be a built-in batch language, perhaps s Windows Basic.

Need for speed

A more immediate issue shared by Reidelberger as well as many other users is the need for a faster Windows. Reidelberger says Windows works "well enough" on his Intel Corp. 80386-based machine, but it slows noticeably on machines such as a 16-MHz 80386SX.

Steve Bosak, corporate communications manager at Palindrome Corp., uses Windows 3.0 with Corel Systems Corp.'s Coreldraw and Micrografx, Inc.'s Designer packages running on a 25-MHz 386DX with cache memory and 8M bytes of random-access memory. He says Windows is "still slow."

"I can't imagine anyone running 3.0 with a serious application on a 286," Bosak says. His biggest wish: "Geoworks-like speed and functionality." He would like to see Microsoft attain performance demonstrated by Geoworks' Ensemble, saying that product's "speed is just blinding compared to Windows."

Some users think Microsoft includes too many nonproductive features in Windows, such as its Solitaire game and the Wallpaper function. Others want to see more features, particularly if they bring the product closer to OS/2.

Compatibility with OS/2 is a big priority for some users. Jim Wegmann, senior vice president of corporate electronic data processing and systems at Chicago's Talman Home Federal Savings and Loan Association, says that his institution intends to standardize on OS/2 because of its power and robustness.

Wegmann says he would like to see the work it is doing on Windows today have s "seamless interface" with OS/2 for productivity reasons.

Robert Harshman, president of Zeek Corp., s graphics consulting firm in Chicago, says he would "love to see" Windows have binary compatibility with OS/2. "It would lessen confusion in the industry and allow developers to target a platform."

"It would be nice to roll in some of the OS/2 features, such as true preemptive multitasking and multithreading," Reidelberger says.

Several users are grumbling about the difficulty of installing Windows.

"I've never been able to install Windows in one shot successfully on a PC," says Andrew Garsten, s microcomputer manager at Security Pacific National Bank. Windows does not seem to offer "very complete" support for the bank's Banyan Systems, Inc. network, Garsten adds, and it crashes far more frequently than the bank's Apple Computer, Inc. Macintoshes do, leading him to question how stable Windows is.

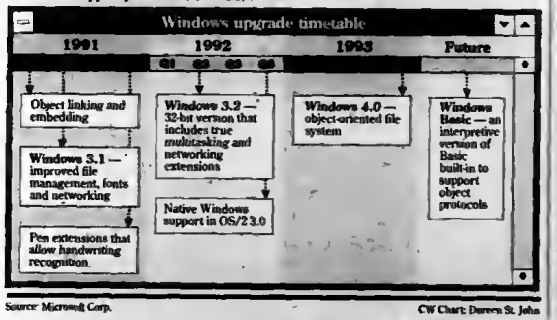
Still, Garsten makes it clear that "[Windows] looks like the direction we are taking for bringing new automation platforms up." ●

Fitzgerald is a Computerworld Midwest bureau correspondent.

Jamie Hagan

The march of time

Microsoft has already charted a path to the eventual release of Windows 4.0, which should see support from DOS and OS/2



Source: Microsoft Corp.

CW Chart: Doreen St. John

With a quantum leap years away, Microsoft schedules incremental changes for Windows

BY JAMES DALY

Any successful product inevitably begs the question, "What's next?" However, Microsoft Corp. Chairman Bill Gates says the next quantum leap in Windows won't come until the object-oriented Windows 4.0 — an arrival most analysts say is at least two years off — and s regular series of incremental advances are scheduled instead.

The first newly tweaked edition, Version 3.1, is expected midyear and is considered to be "a refinement" of Version 3.0, according to Brad Silverberg, vice president of the DOS/Windows group. It will feature Truetype outline fonts technology and improved file management.

After that, the Windows schedule includes the following:

- In the second half of the year, the release of Windows Libraries for OS/2, formerly called the Software Migration Kit or Binary Compatibility Layer, is due. Windows Library for OS/2 will enable Version 3.0 applications to run under OS/2 Version 2.0 — but at a 5% to 10% performance hit.

Also due this year for developers are multimedia extensions that will allow developers to incorporate audio, video, animation, music and new graphics elements into Windows programs and Microsoft's Pen Windows handwriting recognition system.

Pen Windows will allow users to select from menus and enter data with a penlike device, keyboard or mouse. The system will recognise handwritten characters and a handful of editing and system command symbols, according to Jeff Raikes, Microsoft's vice president of office systems.

- Version 3.2, expected in 1992, will support both the 16-bit Windows-16 and 32-bit Windows-32 application programming interface (API). Version 3.2 will position Windows for heavier local-area network use with easier network configuration and installation as well as a standard remote procedure call mechanism.
- Native Windows support will be included in OS/2 Version 3.0, which is reportedly scheduled for arrival in late 1992 or early 1993.
- Windows 4.0 is expected to be released in late 1993. Programs written for Windows 4.0's 32-bit API will run in a preemptive, multithreaded environment, offering an address space of 2G bytes per application. Network extensions will include peer-to-peer Named Pipes and mailslots. ●

Custom applications thrive

From order entry to finance, industries make use of Windows

UTILITIES: U.S. SPRINT

At U.S. Sprint Communications Co. in Kansas City, Mo., Microsoft Corp.'s Windows 3.0 is not *the* standard development platform: There are OS/2-based efforts as well. But since Windows' debut, "more OS/2 things have ended up on the shelf" while Windows use has escalated, according to senior strategist Michael Drips.

As evidence, Sprint's information systems group chose Windows as its platform for a new invoicing application. The system will allow Sprint salespeople to configure new and existing invoicing procedures to suit customer preference.

"We want to be able to structure invoice reporting the way the customer wants it to be," IS project leader Richard Schmidt says. Customizable features would include delivery of invoice copies to multiple locations within the customer's company.

Schmidt says Windows was chosen for its multitasking capability and graphical interface. While the Apple Computer, Inc. Macintosh offered some of the features Sprint was after, there was an economic factor. "You can save a lot of money going with the IBM personal computer clones over the Apple," Schmidt says.

Sprint programmers employed Microsoft Word for Windows, Design and Excel from Microsoft and wrote the code in C. Although Windows proved to be a good choice in retrospect, the developers found its learning curve a bit difficult, Schmidt says.

The application's users, on the other hand, were delighted with the prototype. "They didn't have any problem understanding what was going on with it," Schmidt says.

Although the software will be ready in March, the hardware rollout will take two years. New PCs must be ordered companywide, Schmidt says. He is recommending 25-MHz Intel Corp. 80386DX units with 4M bytes of memory, a minimum 80M-byte hard disk and an IBM Video Graphics Array adapter.

Initially a stand-alone system, the application will be networked via IBM 3270 emulation devices into the company's IBM mainframe, which handles billing processing. ●

RICHARD PASTORE

Bob Barrett

U.S. Sprint's Drips *says more OS/2 products remain on the shelf*

MANUFACTURING: OTIS ELEVATOR

Every month, financial managers at Otis Elevator Co. in Farmington, Conn., receive an 80-page book that includes 570 graphs depicting every major financial indicator in the company. The report, called Chartbook, is produced by a custom application based on Microsoft Corp.'s Windows 3.0.

Otis Elevator's primary business is the design, manufacturing and servicing of elevators and related products. Chartbook allows the company's financial group to gain a quick and concise overview of the entire company's bottom line.

The application is an "automated graphing book," says Gus Evans, a consultant at GWEA in Clearwater, Fla., who worked with the elevator manufacturer in developing the application. The only human involvement required in producing each Chartbook is putting paper in the printer, Evans says.

The application runs on an Intel Corp. 1486-based, 25-MHz personal computer under Windows 3.0 and uses 6M bytes of memory. To produce the physical Chartbook, reports from a financial database are mapped into a Microsoft Excel spreadsheet format, which arranges the numbers into an acceptable form for Charisma, a graphics program from Micrografx, Inc. that puts the files into the graphing template and rescales the charts before the report is printed.

Each report is generated in about two hours — only one-seventh the time it took when the application was first developed under Windows 2.0 in November 1989. The reports are distributed to 22 users, taking the place of cumbersome spreadsheets and unmanageable documents and charts.

The most important benefit of Chartbook, according to Evans, is having one central place in which to locate information. It frees up analysts' time, "allowing them to spot trends, locate areas that need extra attention and reinforce areas that are doing well."

Chartbook has capabilities that no other package has in the same price range, according to Evans. "Anything less than a million dollars for some equipment and software on the mainframe couldn't even come close to what we have developed." ●

JODIE NAZE

INSURANCE: NEW YORK LIFE

Unlike other products that you can see and feel, life insurance is an abstract — an intangible contract on a piece of paper filled with industry jargon. Soon, New York Life Insurance Co. hopes to change all that.

By using a combination of software supported by a Microsoft Corp. Windows 3.0 interface, the company will provide its clients with illustrated models of their life insurance plans.

People will more likely buy what "they can see and understand — and that's what pictures do," says Tom Casey, New York Life's Boston-based senior application project specialist.

Casey is overseeing installation of this graphical sales system in New York Life's general Boston office, which includes Charisma, a graphics program from Micrografx, Inc. in Richardson, Texas, and Microsoft's Excel For Windows spreadsheet. If it works well for the 150 agents there during a one-year trial period starting this summer, the 182 offices nationwide will implement the application, Casey says.

When using the system, the agent enters the client's financial and health-related specifics into either an Intel Corp. 80386-based IBM Personal Computer or an NEC Corp. laptop. After connecting to the bureau's Novell, Inc. Netware 386 local-area network, the agent creates bar, pie and fever graphs to show — rather than tell — the client such details as premium payment, value of the policy over time, death benefits and how each of these factors affects the others.

For New York Life, the key feature of Windows 3.0 is dynamic data exchange, which smoothes the flow of statistics between Excel and Charisma. Spreadsheet changes are automatically updated on the graphics end in the form of a new picture, Casey says.

New York Life developed this illustration scheme in 1987, when it expanded its desktop publishing facilities with Windows 2.1. Memory management troubles while working between Excel and Aldus Corp.'s Pagemaker prompted New York Life to dabble in OS/2. However, the firm scratched its OS/2 experiment in May 1990 when Windows 3.0 appeared.

New York Life already had the required 80386-based PCs, each with 4M to 6M bytes of memory, so switching to Windows 3.0 was a natural upgrade, Casey explains.

The one-year trial will begin when the firm finishes transferring graphics templates to Charisma from Software Publishing Corp.'s non-Windows-based Harvard Graphics, which New York Life previously used. ●

KIM S. NASH

Henry Hilton

New York Life's Casey: *'People buy what they see and understand'*

DIVERSIFIED SERVICES: DUN & BRADSTREET

You might say Dun & Bradstreet Information Services — North America, based in Murray Hill, N.J., arrived at Microsoft Corp.'s Windows 3.0 through the back door. "We were looking for a database management program," recalls Roger Jambor, director of workstation technology. "We found Precision Software's Superbase 4 — and Superbase requires Windows."

Users work with the database management system to develop prototype financial reports. Windows provides the interface and facilitates connecting to the mainframe.

"Our business is collecting data and selling information," Jambor says. D&B loads other companies' financial statements into a database and generates vertical industry reports.

However, the diversified services company is gradually becoming a Windows booster. "We're quite satisfied with Windows. The improvement of 3.0 over previous versions is tremendous — it's stable, and it runs. A lot of divisions at Dun & Bradstreet are making the cultural change to Windows. It's slow, but it is happening," Jambor says.

Before Superbase 4 and Windows 3.0, developers had to elbow for mainframe processing time to produce a new style of report. Now, however, the mainframe is accessed only to pull down the raw data; all formatting and calculation takes place on personal computers.

"It's a two leaps forward," says Ron Ens, senior project director of development at the firm. "It enables us to test a report prototype months faster. Plus, we can download live data for test marketing the report." With other graphical Windows applications, such as Microsoft's Excel, developers can present data in more attractive formats as well.

Because D&B users were already operating Intel Corp. 80386-based PCs, no hardware upgrades were needed. The PCs are networked with Microsoft's LAN Manager. The local-area networks are then connected to the mainframe through Netlogic, Inc.'s 3270 emulator software.

Dun & Bradstreet's Jambor: *'It enables us to test a report prototype months faster'*

Jambor says he is pleased with the new system. "The only problem we've had is speed," he reports.

This drawback is gradually being overcome through use of "codeable modules," which allow users to call up only the part of an application they need at that moment. "By rewriting parts of Superbase in C language," Jambor says, "we avoid incurring the whole overhead of Superbase." •

DEREK SLATER

HEALTH CARE: BAXTER

Baxter Healthcare Corp. is hoping that Microsoft Corp.'s Windows will open up a world of opportunity for its customer service representatives.

"We're standardizing on Windows to enable service representatives to have multiple applications accessible simultaneously," says Michael Purcell, a staff software engineer in corporate information resources.

His company manufactures and distributes products to health care providers. Consequently, a big part of the business success lies in the order-taking process.

About half of these orders go through American Hospital Supply's Asap system via a direct link. The Windows environment is for the customer service representatives on networks completely internal to the company. Called Advanced Data Entry PC Terminal, or Adept, the applications cover preliminary order entry, order status query, pricing information and available inventory.

Baxter started moving over to Windows two months ago.

The customer service application — which is DOS-based and internally built — actually consists of hundreds of pieces.

The company is actively looking at how to restructure that functionality to run as a native Windows application.

In the short term, the goal is to make the order-entry application clean enough to run under Windows' DOS box and stabilize the rest of the configuration, Purcell says.

Another advantage to using the Windows environment is that users can not only run their business line application, but they also have context switching between it and other 3270, DOS and Windows applications running at the same time.

As part of the same project, Baxter completely rearchitected its network servers. IBM's PC LAN Program running on top of a Compaq Computer Corp. server was replaced with a recommendation to use LAN Manager 2.0 and the Microsoft/Digital Communications Associates, Inc. Select Communications Server running on a Compaq Systempro server on an IBM Token-Ring network.

Distributed Systems Technology Group also recommended that users use Compaq's 386N, a diskless Intel Corp. 80386SX box with 5M bytes of memory, IBM's Video Graphics Array, Windows 3.0 and DOS 3.3.1

Some users' sites don't require the functionality at this time, so Purcell says that he expects to have 30% to 40% of a target user base — which ranges from 500 to 1,000 users — switched over by this summer. •

PATRICIA KEEFE

TRANSPORTATION: AVIS

Once bogged down by hours of paperwork for each new fleet of cars rented, salespeople at Avis Car Leasing, a PHH Corp. company in Hunt Valley, Md., will soon be spending more time on the road talking to customers than they will spend in the office, thanks to a customized Microsoft Corp. Windows application.

The application, being developed by Avis senior management consultant Ron McCarty, uses Windows as a common interface for four in-house sales applications. Knowledge Garden, Inc.'s Knowledgepro Windows interface software running on Compaq Computer Corp. Systempro laptops is used to link the applications.

The company adapted the product by adding a customized software program that acts as a Help system to lead the user through each application. For example, when a user takes an order from a customer renting a fleet of cars, the program guides him to the next question, regardless of the chronology in which the questions were asked.

"Windows makes it easier for the salesperson to gather the necessary information to make a proposal," McCarty says.

Six alpha-test users have been trained to run the new Windows-based sales application since January. Five more sales offices with at least five people each will be brought on-line this summer.

"Because this version of Windows is economical and easy to use, we were able to train our salespeople in half a day, and these people were not computer-literate at all," McCarty adds.

McCarty declined to say how much the company invested in the Windows project, but he did say the project is well worth the money. •

MAURA J. HARRINGTON

GOVERNMENT: USDA

Scholars pursuing research grants in the areas of drug addiction, treatment and prevention confront a myriad of confusing grants programs. They may now find it less taxing thanks to Hugo, a research-mentoring system built around Microsoft Corp.'s Windows 3.0.

Hugo was the brainchild of the National Institute on Drug Abuse (NIDA), which awards grants to scholars interested in drug-related research. NIDA, in Rockville, Md., commissioned Development Assistance Corp. in Washington, D.C., to develop the software.

Hugo acts as a mentor for scholars filling out application forms, designing research programs and reviewing available grants, according to Catherine Bolek, associate director of special populations research at NIDA.

"Hugo pulls diverse technologies together under one umbrella, which is Windows 3.0," says Larry Bielawski, director of the Decker Center for Information Technology at Goucher College in Baltimore. Bielawski developed Hugo with his partner, Robert Lewand.

The cornerstone of Hugo is Knowledgepro Windows, an application generation tool from Knowledge Garden, Inc. in Nassau, N.Y. "Knowledgepro provides the executive system that controls all the modules, giving standard objects such as pull-down menus, slider bars and check boxes," Bielawski says. "It also allows the ability to construct expert systems and implement hypermedia."

Underneath Knowledgepro are other tools such as Microsoft's Excel and Lotus Development Corp.'s 1-2-3 spreadsheet. "One monumental step for the research environment using this software is, for example, the ability to change information within a budget in real time, view it on the screen to see if it's correct and, with one keystroke, print it out," Bielawski says. "Before Hugo, this procedure would have taken a great deal of time and manual work."

Hugo is a stand-alone system running on an Intel Corp. 80286-based personal computer at 12 MHz or higher. It is slated to be released May 31.

By reducing the cost and complexity that goes with preparing grant applications, Bolek says, Hugo will increase the number of potential grantees and bring a more diverse group of students to the program.

As for the future, Hugo looks promising, according to Bielawski. "Right now, Hugo is a generic product, and the important thing is to be able to customize it for institutions," he says. "The more customizable a product is, the more useful it will be." •

JODIE NAZE

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Users give key features high marks

Computerworld's Windows 3.0 user survey is based on telephone interviews by Computerworld staff members with more than 40 information systems professionals in charge of implementing large Microsoft Corp. Windows 3.0 installations. Respondents were asked to grade each category on a scale of A through F. The grades were converted to numeric equivalents to find an average.

B+ Overall ease of use

Because of its graphical attributes, Windows 3.0 is seen by many users as more intuitive than the DOS character-based interface. The ability to view multiple windows and move through the system using a mouse is particularly appealing. However, users complain about the File Manager, which is an improvement over MS-DOS Executive but is an awkward mix of graphical and text-based operations.

"The only change I'd make right out of the box is to integrate the Program Manager and File Manager. You can do that now with third-party utilities, but Microsoft should do it," says Basil Mahoney, president of the Windows Presentation Manager Association.

"The File Manager is a weakness because it isn't fully icon-based," says Tom Adam, office systems analyst at Blue Cross.

B+ Ease of training end users

How easy is it for IS professionals to bring users up to speed on Windows 3.0? Well, a lot depends on the users. Survey respondents report that those with Apple Computer, Inc. Macintosh or other graphical interface exposure are easy to train. But if the users come from DOS-only environments, training time can exceed what would normally be expected for DOS.

"The up-front investment may take a little extra time, but that reduces time of learning for subsequent applications," says Bill Remmert, manager of end-user computing at Contel American Satellite Co.

"DOS end users are hard to retrain. People have underestimated the learning curve a bit," says Tom Casey, senior computer development consultant at New York Life Insurance Co.

C Memory requirements

While Windows takes advantage of the protected mode of Intel Corp. 80286-, 80386- and I486-based personal computers, many users find they have to upgrade to an 80386 with 4M bytes of random-access memory to run the package efficiently. IS professionals report that time and care must be taken in planning memory management to coordinate the DOS environment with Windows and Windows applications. This is more important in networking situations where several PCs must be managed.

"We had to upgrade memory on some of the 80286s. Also, some of the programs that run in DOS interfere with Windows memory management, so you can't stay in Windows all the time; you have to switch in and out," says Ron Houck, senior systems designer at Marion Merrell Dow, Inc.

B+ Ability to enhance user productivity

Of all the reasons given for acquiring Windows, increasing user productivity is the one most companies are banking on. So far, IS professionals are optimistic about this point. Some managers report an initial decrease in productivity because users are still working their way around the environment.

"It's a brand new way of looking at things, and the windows and subwindows can be confusing," says Steve Palacioz, network manager at Lockheed Corp.

"Once the users are trained, they are very satisfied and spend more time on their computers. They are more creative on the job and are finding better ways to save time," says Jacque Silver, general manager of the information center at Bankamerica Systems Engineering.

B Compatibility with existing computing environment

Windows' great strength, compared with other graphical user interfaces such as OS/2, is its compatibility with DOS. However, initial forecasts that compatibility would be a snap are being tarnished a bit as users try to fit Windows into their own unique computing environments.

"One of the nicest features of Windows is the menuing, which allows users to go from one software application to another. But it doesn't have some of the functions I find very valuable, such as usage tracking. We have a corporate standard based on Direct Access, an automatic menuing program that logs usage. We use it to determine our return on investment for PCs," says Jacqueline Bynsdorp, PC coordinator at Jockey International, Inc.

B+ Overall value to your company

For many companies wrestling with an alternative to DOS, the availability of Windows has turned their software evaluation process on its head. Just when OS/2 or Macintosh or another alternative was looking better, an interface came along that provided many of the features of the other packages without the pain of switching wholesale to a non-DOS environment and at a more reasonable cost.

"In the past, we were working to catch up to user demands. Now we're working to bring users up to speed with Windows. There's more capability on their desks than they are using," Remmert says.

"We were preparing for a graphical user interface, and the Macintosh was beginning to win until Windows 3.0 came out," says a PC manager at a large financial services company.

B+ Cost vs. benefit, including hardware upgrade costs and installation

Similar to ease-of-training issues, whether Windows provides a favorable cost/benefit result depends a great deal on what's already in place. Users with previous versions of Windows and PCs with a lot of power report lower entry costs.

"To spend $150 per user for Windows 3.0 and then have to spend another $400 to $500 to manage the Windows on a network is crazy," Palacioz says.

"We already had Windows 2.0, so the upgrade was $49 per copy. Hardware upgrades for memory weren't expensive at all — about $90 per machine," says Brian Moura, finance director for the city of San Carlos, Calif.

B Ease of providing ongoing user support

Probably the most important issue for IS managers is whether Windows, once installed, will require more resources than DOS for continuing user support. Those supporting less complicated implementations find that costs actually go down once the learning curve is passed. But more sophisticated applications are requiring more in terms of ongoing support.

"Windows 3.0 gives users more rope to hang themselves with. The fact that it sits on top of DOS means that it has limitations. Any program can hose up the whole works by writing to the wrong piece of memory. Also, because it's so new, our technical people are new at it, too. It's a complex environment," says Lonnie Cordell, systems programmer at Texas Instruments, Inc.

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DOS seen through other windows

DOS-based Desqview offers multitasking capabilities minus the graphical interface

BY ALAN J. RYAN

Not every user needs Microsoft Corp.'a Windows 3.0, and some users want more features than it offers. For them, there are other user interface options and applications that either replace or add to the functionality of Windows.

However, comparing DOS and OS/2 "alternatives" to Windows directly is often like comparing peaches and nectarines. They may be very similar, but they have a slightly different look and feel.

One of the DOS alternatives is Quarterdeck Office Systems' Desqview 386, which sells for $219 (compared with the $149 retail price for Windows) and includes the built-in Quarterdeck Expanded Memory Manager-386.

Desqview offers multitasking capabilities within DOS but does not offer the graphical interface of Windows. The package excels when the user is running a mixture of DOS programs, while Windows works best when the programs running under it are designed specifically for Windows, users say.

"We are doing everything that OS/2 promised to do, but we're doing it with Desqview 386," says a user at a Houston-based petroleum firm. "Why would we want to waste megabytes of random-access memory on OS/2 when Desqview can do this using only a few thousand bytes?"

Satisfactory substitute

Jim Wiehl, analyst for end-user computing at General Electric Defense Systems Division, says Windows may someday become a standard platform. For now, "Desqview delivers on everything we need without purchasing new software. So for an individual or business that needs the flexibilty of running multiple applications and isn't necessarily ready to go out and purchase all new software, Desqview works very nicely," he says.

Another alternative is provided by Digital Research, Inc. (DRI), which sells a $49 product called Gem Desktop 3.1. Gem Desktop is a graphical user interface for DOS, but it does not offer true multitasking capabilities.

DRI also sells an operating system called DR DOS 5.0. DRI claims Windows will run better under DR DOS than under Microsoft'a MS-DOS because it allows the user to load the operating system into a different level of memory, giving the user more room for running applications.

DR DOS, which costs $199, includes the Viewmax graphical user interface. Like Gem, Viewmax does not offer true multitasking but lets users work in a graphical environment using icons, graphical trees or text.

For users who have already moved to Windows, there are ways to add functionality without fear of winding up in a proprietary world. One path to follow is Hewlett-Packard Co.'a New Wave Version 3.0. New Wave requires an Intel Corp. 80286- or 80386-based personal computer configured with at least 2M bytes of extended memory, a 40M-byte hard disk and MS-DOS Version 3.2 or higher, as well as Windows 3.0.

HP takes New Wave beyond the built-in capabilities of Windows by allowing the users to create dynamic links that update data automatically. New Wave also provides New Wave Agents, which act as intelligent macros to automate PC tasks such as allowing users to share information with other users on their network by simply clicking on a mouse, says Richard Walker, HP'a market development manager for New Wave. The product sells for $195.

> "We use New Wave as a protective device to isolate our users from the workings of Windows and DOS and networking."
>
> Mark Floyd
> *Computer Management Services, Inc.*

New Wave essentially frees the users from DOS, says user Mark Floyd, technical services manager at Computer Management Services, Inc. in Fairfield, Calif. The company, which has made New Wave a standard program to run on top of Windows, is a contracting firm that operates data processing for the county of Solano, Calif.

"We use [New Wave] as a protection device to isolate our users from the workings of Windows and DOS and networking," Floyd says.

Floyd adds he is not concerned that the future of New Wave might be limited if Microsoft eventually incorporates the New Wave-like capabilities in Windows. "HP is aggressive about the New Wave product, and I think they will always be a step or two in front of Microsoft," he says.

Neither does the relative lack of New Wave-specific applications worry Floyd, who says more applications are being written with New Wave capabilities.

Users who have migrated to the OS/2 operating system — and thus cannot use Windows — will find another alternative built into OS/2 Standard Edition Version 1.3., which retails for $340: IBM's and Microsoft's Presentation Manager.

Look-alikes

While Windows and Presentation Manager's graphical user interface look very much alike because they share the IBM Common User Access consistent windowing interface, there are internal differences between Windows and Presentation Manager. Applications written for Windows will not necessarily be able to migrate to Presentation Manager without some programming help.

Some differences between Windows 3.0 and OS/2 with Presentation Manager include the following:

- Windows allows for preemptive multitasking of DOS applications in the 386 enhanced mode, while OS/2 does not.
- Windows is configured to run preexisting applications, while OS/2 Presentation Manager is not.
- OS/2 has protection against overwriting system and application memory, while Windows is limited in that capacity.
- Windows offers extensive device support for printers, scanners and displays, while OS/2 does not.
- Windows offers network-specific functionality in its user interface, while OS/2 does not. •

Ryan is a *Computerworld* features senior writer.

Open Look, Motif enhance Unix

For companies that select Unix as the operating system of choice — most typically in fully distributed, networked environments — graphical user interfaces can help shield end users from the complexity of the operating system while still allowing windowing capabilities.

For example, at the National Aeronautics and Space Administration (NASA) Kennedy Space Center in Cape Canaveral, Fla., a work group uses Open Look from AT&T Unix System Laboratories, Inc. and Sun Microsystems, Inc. as its graphical user interface window manager for X Window System, both of which run on top of Unix, according to Dave Roberts, a software engineer at NASA.

One benefit of using Open Look with X Window rather than using X Window alone is that it reduces application development time, Roberts says. "The other benefit is that Open Look provides a lot more consistent user interface and, therefore, might reduce training time. The u ers may be more comfortable and productive," he adds.

The minimum memory requirement to effectively run X Window and Open Look is approximately 6M bytes, Roberts says, but he adds that at NASA, the typical machine running Open Look has 8M bytes.

Another prominent Unix graphical user interface is the Open Software Foundation'a OSF/Motif. Motif also requires at least 6M bytes to run properly. The package consists of components from three vendors.

Essentially, says Craig Lamont, business area manager for Motif, the three-dimensional appearance and window manager in Motif comes from HP, the tool kit comes from Digital Equipment Corp.'a Decwindows, and Presentation Manager comes from Microsoft.

"We selected the Presentation Manager behavior to allow the estimated 15 million users who are using a Windows or menu-driven system, specifically MS-Windows, to be able to transition to the advanced technology easier," Lamont says.

However, Motif was not designed to compete with the windowing systems in the DOS and OS/2 worlds, Lamont adds. "Windows, Motif and Presentation Manager are actually complementary to each other. One of the side benefits has been that whether you are using Windows or Presentation Manager on a PC or Motif on a workstation, the behavioral model is the same."

There is also little difference in functionality between Motif and Open Look, both of which run on top of X Window. "Eventually, you will probably see Open Look and OSF/Motif merge into one product. They are so close now, I don't know if one could compete against the other," Roberts says, although each package has a distinct look, he adds.

ALAN J. RYAN

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CW 3/4

Meeting OS/2 head-on

Success of the Windows interface has forced some OS/2 users to readdress their desktop needs

BY PATRICIA KEEFE

What a difference a year makes. Twelve months ago, corporate information systems managers would have placed OS/2 at the heart of their work group strategies for the '90s. Not so today.

The advent of Windows 3.0 coupled with Microsoft Corp.'s determination to bring that product to maturity has exacted a heavy toll. OS/2's star has dimmed significantly, say restless users who have pronounced it dead on the desktop.

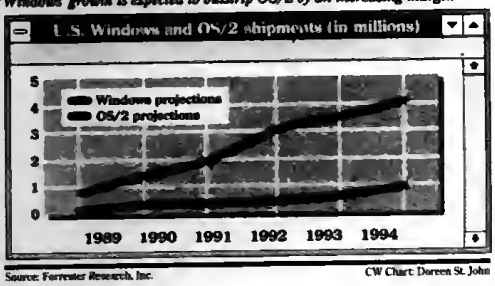
"With the Microsoft/IBM rift, it's really solidifying our position ... not to stay with IBM [on the desktop]," says Jeffrey Kernan, a vice president at Lithonia Lighting, Inc. in Atlanta.

"I looked at OS/2 as a logical successor to DOS, but it hasn't lived up to its billing. Now, I'd hedge my bets," says Andrew Roehr, a systems consultant at Bank of Boston.

Even more critical is Dave Evans, vice president of IS at J. C. Penney Co. in Dallas. "Had IBM delivered a truly effective OS/2 18 months ago, it could have won a lot of the market," he says. Today, "OS/2 is no longer a strategic system for us."

Widening sales gap

Windows' growth is expected to outstrip OS/2 by an increasing margin



Source: Forrester Research, Inc. CW Chart: Doreen St. John

Tightening the screws

The pressure is on, and IBM is feeling the pinch. Last month, reports circulated that IBM would hold a daylong seminar to articulate its plans for OS/2 more forcefully. Also, John Soyring, director of software development support, has taken on an active OS/2 evangelizing role.

This is precisely the kind of reaction that large accounts, such as the Royal Bank of Canada, which have invested "millions of bucks" in OS/2, are demanding to see.

The Royal Bank is both the third largest bank in North America and a charter member of IBM's OS/2 and Officevision user councils. It took Microsoft's recent statements of direction concerning Windows' future, including support under New Technology Portable OS/2, "very seriously," says George Oliver, manager of information delivery technology at Royal Bank.

Although he considers some of Microsoft's statements to be "irresponsible," he was awaiting a response from IBM at press time.

"For organizations like us that are taking an enterprisewide system approach, Windows 3.0 is not viable; it's too unstable in a network environment," he says. The way Oliver sees it, Microsoft is saying, "Trust us, and 18 months from now, maybe we'll [be able to meet] your needs."

Still, Oliver says, "It's time for IBM to move beyond behind-the-scenes assurances." If IBM doesn't do something soon, he claims, the bank will be forced to reopen its entire enterprise strategy even though it would set the bank back 18 months.

Other shops have already beaten the bank to the punch, particularly on the client, where many former supporters have trashed plans to go with OS/2. For these users, Windows is simply cheaper, easier and supported by many more applications.

"Windows 3.0 meets 90% of my needs today on the desktop," Evans says.

"A year ago, I'd have said OS/2," says a personal computer manager at a large national retailer. With the advent of Windows 3.0, his firm has changed direction "180 degrees." In fact, his group is using Microsoft's plans to merge Windows with the OS/2 kernel as ammunition to support a switch to Windows for most desktops. Subsequently, IBM has turned on "a lot of pressure," he says, but to no avail.

Even OS/2 advocate Bank of America is "actively looking" at Windows for production applications, Vice President George Cheng says: "We are using OS/2 in niche applications and on servers that specifically need its power and functionality."

Where OS/2 does hold sway and still has a chance is on the server, particularly among client/server, data repository and SQL Server advocates. "Windows lacks true preemptive multitasking and protection of programs from each other," says John Tarbuck, a consultant at Canaan Analytics.

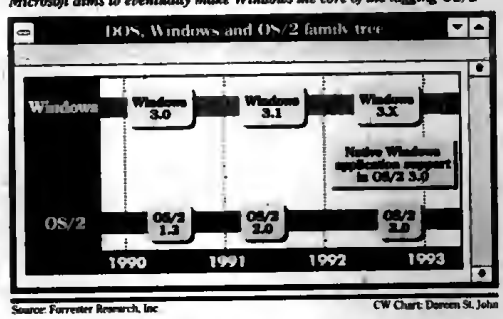
But even there, support is beginning to erode. It's hard to piece together a client/server strategy today with Windows desktops attached to OS/2 servers. For example, IBM's DOS requester and Windows reportedly do not work well together.

Evans complains about the lack of coordination between OS/2, OS/2 LAN Server and the Database Manager. He plans to devote his server efforts to AT&T's Unix System V. "It's gonna be the winner," he says.

Many users are now taking a second hard look at Unix. Where OS/2 does have merit — in communications-intensive applications — it runs smack into Unix, according to Roehr. For his money, Virtual Networking Software from Banyan Systems, Inc. "blows OS/2 out of the water" on larger networks.

Merging product lines

Microsoft aims to eventually make Windows the core of the lagging OS/2



Source: Forrester Research, Inc CW Chart: Doreen St. John

The recent cloud over the future of LAN Manager is likely to exacerbate second-guessing among users. Where IBM and Microsoft once stood united on LAN Manager, there are hints that the rift may have widened.

Last month, Microsoft said networking capabilities would be built into New Technology Portable OS/2, begging the question of LAN Manager's future as a stand-alone application. As for IBM, last month's well-timed decision to formalize its long-rumored relationship with Microsoft rival Novell, Inc. only adds to the uncertainty. Suddenly, there are promises of Netware everywhere on IBM.

The final nail in the coffin for some uneasy users is the endless delays with Officevision LAN 2.0. "We've already decided not to go with Officevision," says one manager at a major financial institution that is looking to alternatives such as NCR Corp.'s Cooperation and Lotus Development Corp.'s Notes.

Lone supporters

About the only place that OS/2 seems to be holding its own is in those shops that have written their own production applications. In some cases, once ambitious corporatewide OS/2 plans have been pared down until only specific, mission-critical applications remain. These projects will likely proceed untouched by the Windows vs. OS/2 wars.

Because the users are building their own applications, they are not affected by independent developer decisions. Also, because these projects are not targeting the personal productivity/office automation arena, few incorporate a graphical user interface. Therefore, the uncertainty over the future of Presentation Manager has no impact.

IBM is further hobbled by the strong feeling among many users that software just isn't its forte. "From an operating system point of view, Microsoft has some of the best technology available. I believe if anyone can pull all this together, they can," says Stephen Turner, a consultant to Chevron Canada.

Roehr agrees: "What I don't hear from people I know at IBM is any sense of direction internally. If their employees are confused, their clients are *totally* confused."

It's begun to look as though OS/2 may prove to be the final test for IBM's technical and marketing software expertise in the microcomputer market. Users' bottom line to IBM appears to be this: "You have a 12- to 18-month window in which you can acquit yourself on OS/2." If IBM fails to deliver, when and if a 32-bit Windows shows up, many OS/2 users say they won't hesitate to pick it up. ●

Keefe is Computerworld's senior editor, PCs and workstations.

IBM forced into defensive role

BY PATRICIA KEEFE

"How goes the battle?" That question best describes the state of affairs between IBM and Microsoft Corp. and between their joint creation, OS/2, and Microsoft's upstart, Windows.

After almost a year and a half punctuated by bickering over the functionality and roles of Windows and OS/2 and subsequent follow-up exercises in damage control, the simmering dispute boiled over in January after a published report said Microsoft was dropping OS/2 [CW Feb. 4].

While IBM seethed at Microsoft, business line managers called information systems strategists on the carpet. As IS managers in turn grilled IBM account executives on the future of their OS/2 investments, Microsoft Chairman Bill Gates personally dashed off a press release denying any plans to dump OS/2.

Still, there is no denying that Microsoft favors a "Windows everywhere" strategy. Company executives acknowledge that the Windows graphical user interface is at the core of New Technology Portable OS/2. They also concede they have been telling developers for months to write to Windows, not OS/2. Furthermore, plans to provide binary compatibility between Windows and OS/2 applications have been shelved for now, if not dropped.

New name

According to Microsoft, what was once called binary compatibility has been renamed the Windows Library for OS/2. One developer accused Microsoft of playing a shell game, saying the library is actually the renamed software migration kit. As far as Lee Reiswig, IBM assistant general manager at the Programming of Entry Systems Division, is concerned, binary compatibility "bit the dust."

Microsoft will provide several modules — Windows 3.X, Windows-32, OS/2 Presentation Manager, Posix and DOS — with New Technology Portable OS/2, which is due out between mid-1992 and mid-1993. However, most observers say they expect Microsoft to continue focusing its efforts on the Windows portion, which means it could be up to IBM to ensure that the Presentation Manager graphical user interface receives equal promotional time and development dollars, developers say.

When pressed about the likelihood that Microsoft will push Windows to the virtual exclusion of all else, Reiswig said only that he is unaware of any plans by Microsoft to do so.

However, Reiswig also acknowledges the need for IBM to push its viewpoint separately from Microsoft and in a more public forum. He quips that would-be OS/2 developers have moved to Missouri, the "Show me" state. Consequently, Reiswig says, IBM will have to prove to these developers that OS/2 has a future. How it will accomplish this is not clear, however [CW, Feb. 25].

For now, he says, users and developers can expect the following in 1991:

- Delivery of OS/2 Version 2.0, a 32-bit operating system that briefed sources say will support DOS and Windows applications as well as provide simultaneous access to IBM's LAN Server, Novell, Inc.'s Netware and Microsoft's SQL Server. Sources expect a late fourth-quarter delivery.
- Delivery of a spate of IBM applications directed at a variety of vertical markets. It's expected that IBM will continue to push developers to produce graphical OS/2 applications; most OS/2 programs currently run in character mode.
- User transitioning from pilot projects to production systems running under OS/2.
- An interim release of Officevision this month, although no delivery date has been set for release of the next major upgrade, Release 2.0. •

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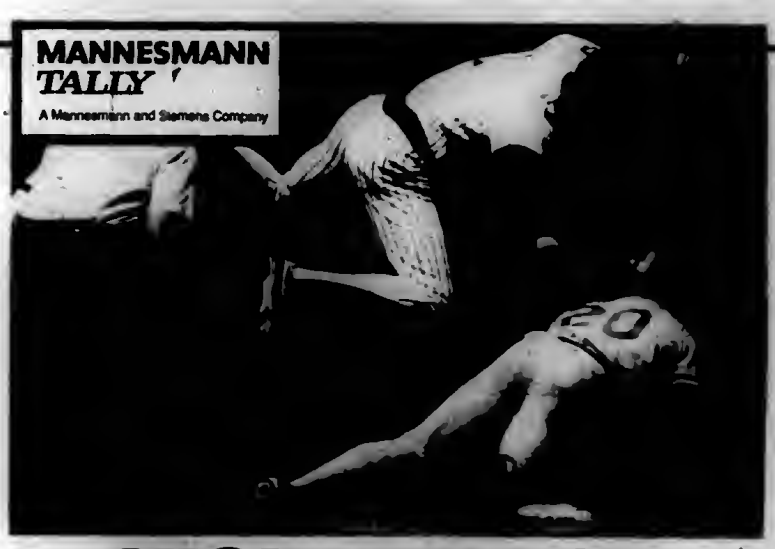

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Macintosh still holds graphical edge

ANALYSIS

BY JOHN DUNKLE

For DOS users, Microsoft Corp.'s Windows 3.0 represents a quantum leap over previous interfaces in terms of ease of use. But how does it compare to the oft-proclaimed leader in user friendliness, Apple Computer, Inc.'s Macintosh?

The duplication of the Macintosh environment is the unstated goal of all interface software currently hitting the market. Whether it is Windows or the new Unix interfaces, the model being followed is the intuitive Macintosh system software with Finder feature.

The problem that all of these interface technologies confront is that, at best, these are shells over a very complex operating system. Even the best of the Unix interfaces, the Open Software Foundation's Open Look and Motif, require Unix command syntax to finish a command sequence.

Network management tools for these interface shells require the same confusing character command sequences. Intuitive interoperability for applications is still a sought-after goal.

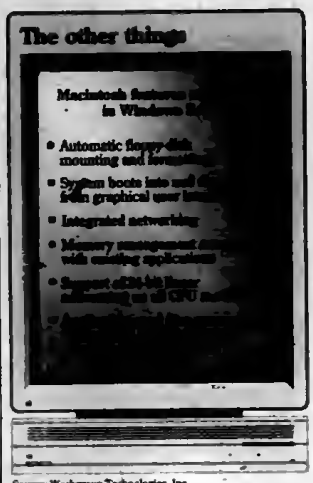
Windows is no exception. Despite its advances as a graphical user interface-based environment, the software is a shell over DOS and therefore still requires users to understand DOS and use command sequences for some functions. Windows 3.0 also lacks the full set of interface conventions and applications consistency that are part of the Macintosh's claim to fame.

Despite those basic differences, the computer industry has been quick to make comparisons between the two graphical user interface environments. Much of the comparison assumes that Windows users are already familiar with DOS commands. Macintosh users would be less likely to be comfortable with Windows because they would have to learn DOS. For this reason, among others, firms that have invested in the Macintosh will not likely abandon their current Apple platforms and replace them with a Windows platform.

For example, at a major East Coast financial institution where applications are already developed for the Macintosh, a conversion to Windows would take "unprecedented man-years of development and extensive budgets," according to the company's vice president of information services.

At Martin Marietta Corp. in Chantilly, Va., where Macintosh and DOS-based systems both are used, Windows 3.0 is considered a "migration path to a graphical user environment" for DOS users, says Steve Birgfeld, manager of the company's product evaluation center. However, users accustomed to working on the Macintosh will not be forced to make the switch and learn DOS, he adds.

"The Macintosh represents a more stable environment than Windows/DOS. Windows is not as inviting, nor is the desktop as functional in Windows 3.0 as it is in the Macintosh," says Andrew Garsten, information systems supervisor at Security Pacific in Los Angeles.



Source: Workgroup Technologies, Inc.
CW Chart: Doreen St. John

These opinions are echoed by a large number of IS managers with significant investments in both Macintoshes and PCs who were interviewed on their views of Windows vs. the Macintosh.

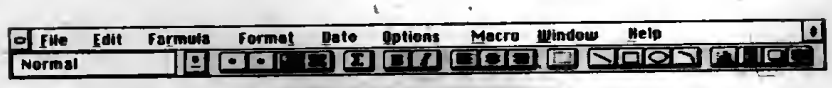
A factor in the Macintosh's popularity is the number of readily available applications, combined with the consistency of their user interface. "Applications are more consistent on the Mac than they are under Windows 3.0," Garsten says.

Fewer than 5% of all DOS applications conform to the Windows operating environment, while all of the more than 3,500 Macintosh applications conform to the Macintosh interface. Although there are about 1,400 applications for the Windows family, not all have been rewritten for compatibility with Windows 3.0.

By the end of 1990, independent software vendors had developed almost 400 Windows 3.0 applications, but many of them are communications utilities or are

Dunkle is vice president at Workgroup Technologies, Inc. in Hampton, N.H.

Software Spectrum would like to give you a few pointers on Microsoft Excel for Windows 3.0.



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corporate-specific. Therefore, there are far fewer broad-based commercial applications such as word processors, spreadsheets and graphics programs for Windows 3.0 than for the Macintosh.

Aside from the Macintosh's obvious upper hand in maturity, however, the key difference goes back to the fact that Windows 3.0 is a shell over DOS. This means that for many functions within Windows 3.0, the user must revert to the character-based DOS command syntax.

While Windows 3.0 makes most of DOS's complexity transparent, unlike the Macintosh, it doesn't keep system-level functions within its read-only memory (ROM).

This means that users cannot rely on interface conventions to transfer from application to application, and features such as dynamic live links are dependent on the software developers' methods of implementation. This is relevant in evaluating Windows 3.0 as an intuitive environment because the value of such a system lies in the speed with which a novice user can be productive and the ability for experienced users to readily use new applications.

Inconsistent application

Windows 3.0 does provide a seamless environment for running applications, but this ability applies specifically to Windows 3.0 applications only. One of the hindrances to applications consistency in Windows 3.0 is that Microsoft has specified three different ways to implement dynamic data exchange capability for sharing information.

Therefore, only Windows 3.0 applications that are written to the same convention can take advantage of dynamic data exchange, and the potential for uniform consistency among all applications is lost.

In addition, Microsoft has not specified a single set of conventions to use for adding features to applications, which again prevents consistency for users. This decreases user productivity because Windows 3.0 users need more training to learn software, and it is more difficult for users to learn a new application quickly.

The Macintosh, by contrast, was developed as a complete environment that includes the operating system, file and application conventions and an interface for access and manipulation. Unlike the user of Windows 3.0, a Macintosh user is always within the Macintosh's graphical environment. Furthermore, all of the methods used for direct manipulation of files and applications are consistent throughout the environment.

Users can, for example, copy and install applications or files — or make any other changes — with the same point-and-click techniques. There is no need to revert to command syntax for file or application manipulation at any place in the Macintosh environment. With Windows 3.0, by contrast, users have to revert to a command-based Program Manager for application storage and a File Manager for file storage.

Furthermore, Apple has been much more specific than Microsoft about the rules developers need to follow in writing applications. The Macintosh also includes all the tools and features needed to let an application interface with the underlying hardware. Tool kit enablers such as the Window Manager reside within the Macintosh system's ROM to help the developer write applications.

Applications that closely follow these guidelines function in the same manner on any Macintosh system, providing users with a familiar environment and method of direct manipulation.

Added features

The Macintosh graphical environment includes features for cooperative multitasking, calculations, printing, digital sound and, most importantly, networking.

All elements within the system — storage facilities, peripherals, files, directories (called folders) and applications — are represented by icons.

The modular design and device independence enhance the systems integration capabilities of the Macintosh. A user can add functionality through the same type of direct manipulation that allows an application to be installed by "dropping" the application icon onto the system folder. When a user wants to specify, for example, a different printer for a task, he uses the Chooser desktop accessory to highlight the desired printer with a point and click of the mouse. In Windows, by comparison, the user has to install a unique printer driver for each printer, and each printer has its own characteristics. •

Numerous options

Major Macintosh applications that have been or are being ported to Windows 3.0 include the following:

- **Adobe Systems, Inc.'s Illustrator (February) and ATM (available now)**
- **Aldus Corp.'s Pagemaker (February) and Persuasion (second-quarter 1991)**
- **Informix Software, Inc.'s Wingz (available now)**
- **Microsoft's Excel, Word and Powerpoint (all available now)**
- **Quark, Inc.'s Quark Express (sometime this year)**
- **Software Ventures Corp.'s Microphone II (available now)**

INFOMART On Site EVENTS

INSURANCE MAR 18-19

American Association of Managing General Agents will be looking at imaging, networking, computers and voice mail applications.

RELIGION APR 4-6

Join pastors, church staff, secretaries and laymen at the *National Christian Computing Expo & Convention.*

GOVERNMENT APR 16

Information systems professionals working in government can learn the benefits of computer-aided software engineering (CASE).

BANKING APR 23

Find out how image management can speed processing of checks, loan applications and credit card billing during *Image Processing in Banking* sponsored by INFOMART.

Attend these special events and visit more than 100 high-technology companies, including Andersen Consulting, Apple, AT&T, D&B Software, EDS, Epson, GTE, IBM, Minolta, NCR, Novell, Texas Instruments and Xerox. Call for a complete directory. For information about INFOMART or any of these events, please call **(800) 232-1022.**

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Windows of opportunity

Since Microsoft Corp.'s announcement of Windows Version 3.0 last May, the product has been draped with a myriad of add-on packages and products billed as Windows-compatible. The following are among the announcements made during the last nine months:

Desktop publishing

Aldus Corp.'s Pagemaker Version 4.0 — a desktop publishing package that began shipping last month — features a built-in word processor, text handling and professional typographic controls.

The product enables Windows 3.0 users to convert layout and text windows into easily accessible icons and to establish Dynamic Data Exchange links with Microsoft Corp.'s Excel 3.0, according to the company.

A DOS-compatible Intel Corp. 80386-based personal computer equipped with a 40M-byte hard disk and a minimum of 2M bytes of random-access memory is recommended.

Pagemaker 4.0 is priced at $795.

Aldus
411 First Ave. South
Seattle, Wash. 98104
(206) 628-2361

In July, Windows 3.0 users got their first glance at Ventura Software, Inc.'s Ventura Publisher desktop publishing package and Formbase Version 1.1, a database management program designed to automate the design, manipulation and management of forms and form-related data.

Ventura Publisher ($895) features a user interface redesigned for the Windows 3.0 environment, automatic mouse scrolling and support of the Windows Clipboard.

Formbase 1.1's transparently integrated forms drawing and relational database manager is said to enable users to create and change databases by drawing a form. The product is priced at $495.

Ventura Software
15175 Innovation Drive
San Diego, Calif. 92128
(619) 673-0172

Development tools

Arity Corp.'s Arity/Windows Tool Kit enables users of its Arity/Prolog Version 6.0 prolog environment to write applications for Windows 3.0 environments.

The product began shipping in January and is priced at $350.

Arity
29 Domino Drive
Concord, Mass. 01742
(508) 371-1243

Asymetrix Corp.'s Tool Book Version 1.0, a software construction set for the Microsoft Corp. Windows 3.0 environment, enables users of Intel Corp. 80286-based personal computers to build customized graphical applications by using an object-oriented programming language rather than traditional programming languages.

The software package includes color drawing tools and Openscript, its object-oriented programming language. Openscript includes réusable code and enables users to use objects that encapsulate data and code.

Tool Book 1.0 also features hypernavigation, animation and text formatting capabilities.

The product began shipping in May and is priced at $395.

Asymetrix
110 110th Ave. NE
Bellevue, Wash. 98004
(206) 637-1500

Version 2.0 of Manager Software Products, Inc.'s Manager View was designed to facilitate application development in a Windows 3.0 environment.

Manager View is a programmable, workstation-based graphical user interface to the company's Manager series of products that are driven off Manager Software's corporate repository.

Version 2.0 includes a context-sensitive Help facility that is integrated with the Windows 3.0 Help system and a Repository Diagram Generation feature that allows business and process function definitions stored in the corporate repository to be automatically converted into full-color diagrams.

Version 2.0 began shipping last month. Single-copy pricing is $7,200.

Manager Software Products
131 Hartwell Ave.
Lexington, Mass. 02173
(617) 863-5800

GUI Computer, Inc.'s 3-in-1 Prototyper allows users to generate executable C source code for screens and dialog boxes in a Microsoft Corp. Windows 3.0 environment.

The product comprises a screen designer equipped with 12 types of objects for screen arrangement and a code generator.

C code and C++ versions are priced at $99 and $159, respectively. The C version began shipping in November, and the C++ version began shipping last month.

GUI Computer
6604 Fernshaw Drive
Dallas, Texas 75248
(214) 250-3472

Version 1.3 of Gupta Technologies, Inc.'s SQLwindows was designed as an environment in which Windows 3.0 users can

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develop applications under client/server architectures.

The database management system application development product allows users to develop Windows applications by using point-and-click techniques instead of relying on the Windows Tool Kit or the C progamming language.

The product includes a single-user copy of Gupta Technologies' SQLbase engine and is priced at $1,295. The package began shipping in May.

Gupta Technologies
1040 Marsh Road
Menlo Park, Calif. 94025
(415) 321-9599

Kofax Image Products, Inc.'s KIPP Developers Toolkit Version 1.1 is now available for Microsoft Corp.'a Windows 3.0, DOS and OS/2 Presentation Manager users.

The product features image display rotation, simultaneous scanning and displaying and image rotation before printing.

The Windows version has been shipping since mid-October and is priced at $1,595.

Kofax Image Products
3 Jenner St.
Irvine, Calif. 92718
(714) 727-1733

Graphics

Version 2.0 of Corel Systems Corp.'s Coreldraw features a suite of special effects, 153 scalable outline typefaces and WFNBOSS, a utility designed to convert the product's typefaces into the Adobe Systems, Inc. Type 1 format.

The graphics program's special effects include an envelope feature that enables users to manipulate a bounding box to distort shapes, text or graphics; a perpective feature that gives objects a sense of depth; and an extruding function that makes objects three-dimensional.

The product began shipping in November and is priced at $695, according to the company.

Corel Systems
1600 Carling Ave.
Ottawa, Ont.
Canada, K1Z 8B7
(813) 728-8200

In June, Micrografx, Inc. began shipping a business graphics program that integrates word or business charts, desktop presentations, illustrations and more than 2,200 free clip art images into a single package.

Charisma ($495) allows users of Intel Corp. 80286- or 80386-based personal computers to create two- or three-dimensional pie, bar, column or line charts. It features Slideshow, an electronic slide utility that includes fade and wipe effects, predefined master pages, predefined word chart templates and predefined business charts.

Micrografx's other offerings for Microsoft Corp.'a Windows 3.0 include Designer Version 3.01 ($695), an illustration program that features outline font support and paragraph-oriented, on-screen text editing; Draw Plus Version 1.1 ($229), a vector-based drawing program equipped with six outline fonts and 2,200 clip art symbols; and Xport ($395), a graphics translation program designed to remedy file format incompatibility problems between applications.

Designer 3.01 began shipping in May. Draw Plus 1.1 initially began shipping as a special holiday version in October. Xport began shipping in January.

Micrografx
1303 Arapaho
Richardson, Texas 75081
(214) 234-1769

Mapping software

Mapviewer was designed by Golden Software, Inc. as a thematic mapping package that allows Microsoft Corp.'s Windows 3.0 users to interactively analyze and visualize geographic data.

The product creates various types of maps by linking worksheet data to areas or points on a map, the vendor said.

Mapviewer began shipping in December and is priced at $249.

Golden Software
809 14th St.
Golden, Colo. 80401
(303) 279-1021

Personal information management

IBM's Current Version 1.1 is a personal information manager that includes a Dynamic Data Exchange feature that enables users to exchange data between Current and other Microsoft Corp. Windows-based products. Other features include multiple data directories, additional font support and copy-to and paste-from functions designed to directly move data between files.

System requirements include IBM Personal Computer ATs, Personal System/2s or compatibles equipped with an Intel Corp. 80286 processor, a 20M-byte hard disk and 640K bytes of memory.

The product began shipping in June and is priced at $395.

IBM
1133 Westchester Ave.
White Plains, N.Y. 10604
(800) 426-7699

Polaris Software's Packrat Version 3.0 is a customized personal information manager that features an intuitive design that facilitates business and personal information management.

The product includes a telephone book for storing telephone numbers, addresses

Continued on page SR/22

For once, an announcement that will have businesspeople jumping into windows.

Until now, a lot of businesses have been hesitant to take the plunge into Windows. People have wondered, for instance, whether critical applications and viable communications would become available.

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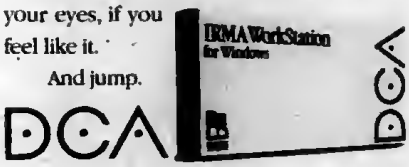

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Continued from page SR/21

or facsimile numbers; a meeting and appointment scheduler that can alert users to scheduled meetings; a time management feature; and document tracking and project management features.

Packrat has a list price of $395. A network server version costs $695, and additional nodes are priced at $150 each. The product began shipping in July 1990.

Polaris Software
1820 S. Escondido Blvd.
Escondido, Calif. 92025
(619) 743-7800

Presentation software

Microsoft Corp. began shipping its Powerpoint for Windows presentation tool at the same time as it rolled out Windows 3.0. The intuitive software package features drawing, text, charting and color schemes.

The product is priced at $495.

Microsoft
One Microsoft Way
Redmond, Wash. 98052
(206) 882-8080

Spreadsheets

Informix Software, Inc. began shipping Version 1.1 of Wingz for Windows 3.0, a spreadsheet designed for graphical desktop environments, in June.

The product reportedly enables users to combine text, numbers, three-dimensional graphs and imported images on a single page. It includes Hyperscript, a graphical language that enables users to maintain control of every aspect of their graphical interface, the vendor said.

A bundled package that includes Wingz for Windows and Wingz for OS/2 Presentation Manager began shipping in June and is priced at $499.

Informix Software
4100 Bohannon Drive
Menlo Park, Calif. 94025
(415) 926-6300

Microsoft Corp.'s most recent Windows 3.0 rollouts include Excel Version 3.0, a spreadsheet that includes a database and business graphics, and Office Version 1.5, a package consisting of Excel, Word for Windows and Powerpoint.

Excel enables users to display multiple worksheets and charts together, create summary reports and consolidate data. Other features include the ability to use files and macros created in Lotus Development Corp.'s 1-2-3 spreadsheet, single-keystroke chart creation and the ability to preview documents prior to printing.

Excel began shipping in January and is priced at $495.

Office Version 1.1, priced at $995, began shipping last month.

Microsoft
One Microsoft Way
Redmond, Wash. 98052
(206)882-8080

Word processing

Microsoft Corp.'s Word for Windows was unveiled in August. The graphical interface-based word processing program allows users to combine text, graphics and numerical data in a single document.

It features what-you-see-is-what-you-get fonts and graphics and enables users to transfer numbers, text or pictures from another application into their documents.

The product is priced at $495.

Microsoft
One Microsoft Way
Redmond, Wash. 98052
(206) 882-8080

Samna Corp.'s Ami Version 1.2 and Ami Professional Version 1.2 allow Windows 3.0 users to employ Windows features such as three-dimensional push buttons and proportional system fonts.

Both word processors are compatible with Microsoft Corp.'s Word for Windows and Rich Text Format, thereby enabling users to transfer files between Apple Computer, Inc. Macintosh word processors and Ami Professional, the vendor said.

Ami Professional Version 1.2 ($495) began shipping in May, and Ami Version 1.2 ($199) started shipping in September.

Samna
5600 Glenridge Drive
Atlanta, Ga. 30342
(404) 851-0007

Developers confab

Microsoft Corp. plans to hold two Corporate Developer Tools Conference and Expositions. The two-day seminars will be held in New York on April 11-12 and in San Jose, Calif., on April 30-May 1.

Corporate developers will be able to learn about available personal computer-based development tools ranging from computer-aided software engineering tools to customizable applications to low-level languages. Case studies from corporate development projects will illustrate tools in action.

The conference will highlight tools for Windows, OS/2 and client/server environments. Registration costs $695. For more information, call Microsoft at (206) 882-8080.

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Utilities fill the cracks in Windows

Probably the most common products released for Windows 3.0 are utility packages. Ranging from text searchers to virus detectors and image capturers, these products fill in gaps or enhance Windows' functionality. The following is a brief listing of some of the utility packages released for Windows 3.0 since its announcement last May:

Access Softek offers two programs for Windows 3.0: Dragnet Version 2.1, a text search-and-retrieval program, and Prompt Version 2.0, a hard disk file manager.

Dragnet Version 2.1 ($145) can reportedly search through a hard disk to find key words located in any type of file. Information from hard disk files can be displayed as it is found and stored in summary files or copied and pasted into other Windows applications.

Prompt Version 2.0 ($130) is a Windows program that allows users to view a file before working on it. Encryption and compression functions are featured, and viewers for files such as Wordperfect Corp.'s Wordperfect, Lotus Development Corp.'s 1-2-3 and Ashton-Tate Corp.'s Dbase are provided.

Dragnet Version 2.1. and Prompt Version 2.0 have been shipping since last May.

Access Softek
3204 Adeline St.
Berkeley, Calif. 94703
(415) 654-0116

Abacus Software, Inc. has released a software package that monitors the Windows 3.0 environment for viruses.

Virus Secure can identify more than 200 known viruses and protect against unauthorized changes to files, the vendor said.

The product is scheduled to begin shipping next month and is priced at $95.

Abacus
5370 52nd St. S.E.
Grand Rapids, Mich. 49512
(616) 698-0330

Anderson Consulting & Software's contribution to Windows 3.0 is an image capture tool designed to record an entire or partial Windows display by using 13 standard image file formats.

Tiffany Plus Version 2.0 ($89) features compatibility with Windows color, monochrome and gray-scale adapters and raster printers; a gray-scale spreading option that can be used to generate gray-scale images from color diplays; and nine hot keys.

The product began shipping last month.

Anderson Consulting & Software
P.O. Box 40
N. Bonneville, Wash. 98639
(509) 427-5335

ATI Technologies, Inc. has unveiled a line of Microsoft Corp.-certified Windows 3.0 drivers that were designed for ATI's IBM Video Graphics Array (VGA)-compatible Wonder+ card.

The drivers, which began shipping last August, support 256 colors in 800- by 600-, 640- by 480- or 1,024- by 768- by 16-pixel modes and feature a 70-Hz refresh rate.

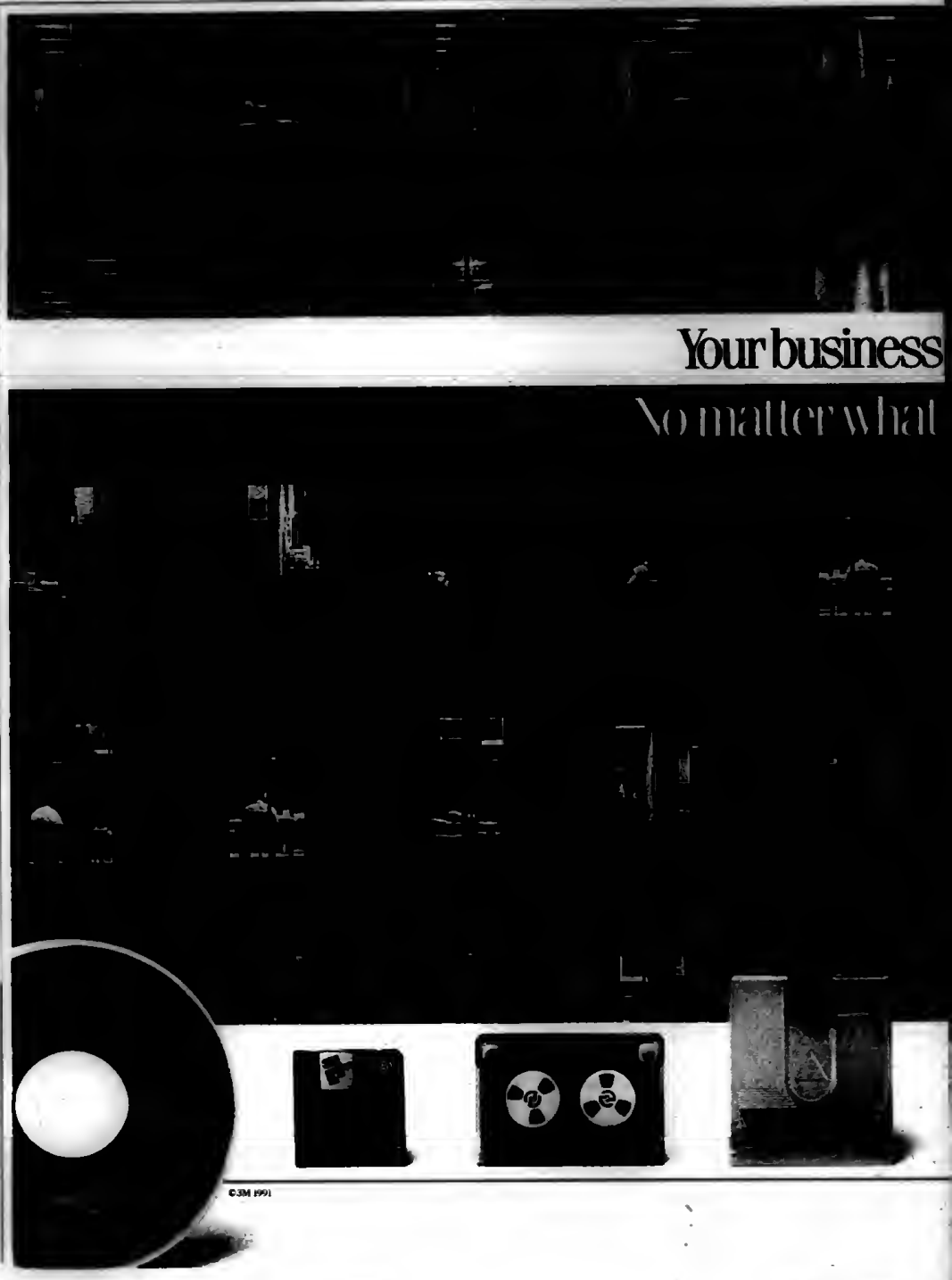
The products are being bundled with 256K- and 512K-byte versions of the VGA Wonder+ boards, which are priced at $299 and $349, respectively.

ATI Technologies
3761 Victoria Park Ave.
Scarborough, Ont.
Canada M1W 3S2
(416) 756-0718

EDCO Services, Inc.'s Letrtuck+ for Ventura Publisher 3.0 Windows Edition is a kerning utility that operates under Windows and enables users to alter character pair kerning by using a mouse and any graphics screen supported by Windows.

The product includes kerning data for the 24 most popular Adobe Systems, Inc. Postscript fonts. It began shipping in December and is priced at $99.

EDCO Services
12410 N. Dale Mabry Highway
Tampa, Fla. 33618
(813) 962-7800



KEA Systems Ltd.'s Keaterm 420 is a software emulation of a Digital Equipment Corp. VT420 terminal designed specifically for Windows 3.0 environments.

The software package is said to enable users to access all of their VAX or Unix text-based applications from within a Windows environment.

A shipping date has been scheduled for next month, and the product's introductory price is $195 until July 1.

KEA Systems
3738 N. Fraser Way
Burnaby, B.C.
Canada V5J 5G1
(604) 431-0727

Marketfield Software Development Corp.'s Winterm is a terminal emulation software package that supports multiple, virtual DEC VT220 and VT100 sessions on IBM Personal Computer ATs or compatibles running Windows.

The product is said to provide an interface to Windows applications and local and remote hosts via the Windows clipboard and Microsoft Corp.'s Dynamic Data Exchange protocol.

Winterm began shipping in December. A single-copy license is priced at $499.

Marketfield Software Development
90 Broad St.
New York, N.Y. 10004
(212) 344-5610

HDC Computer Corp. has enhanced its utilities set and corporate menuing system for the Windows 3.0 environment.

The products include HDC Fileapps, a set of five Microsoft-based pop-up utilities for file operations within Windows that is slated to begin shipping this month; HDC Firstapps, which is composed of nine pop-up utilities that can be used to customize and enhance the Windows environment; and HDC Windows Express, a corporate menuing system for use in creating standard Windows workstations on a local-area network.

Pricing ranges from $100 to $130, depending on type of product purchased. Firstapps and Windows Express have been shipping since last May.

HDC Computer
6742 185th Ave. N.E.
Redmond, Wash. 98052
(206) 885-5550

The Whitewater Group, Inc. has announced an updated version of its Whitewater Resource Toolkit, which was designed specifically for Windows 3.0 environments.

The interactive tool kit provides Windows 3.0 programmers or systems integrators with a visual way to create, edit and manage the look and feel of Windows applications, according to the vendor.

The product began shipping in November and costs $195.

The Whitewater Group
1800 Ridge Ave.
Evanston, Ill. 60201
(708) 328-3800

Version 1.1 of Saber Software Corp.'s Saber Menu for Windows started shipping last week.

The product is said to automatically create and manage Windows Program Information Files and Initialization files needed to operate the Windows environment and Windows applications. Both of these programs run from the workstation and hard drive where Windows is installed, the vendor said.

Saber Menu for Windows is priced at $495.

Saber Software
P.O. Box 9088
Dallas, Texas 75209
(214) 361-8086

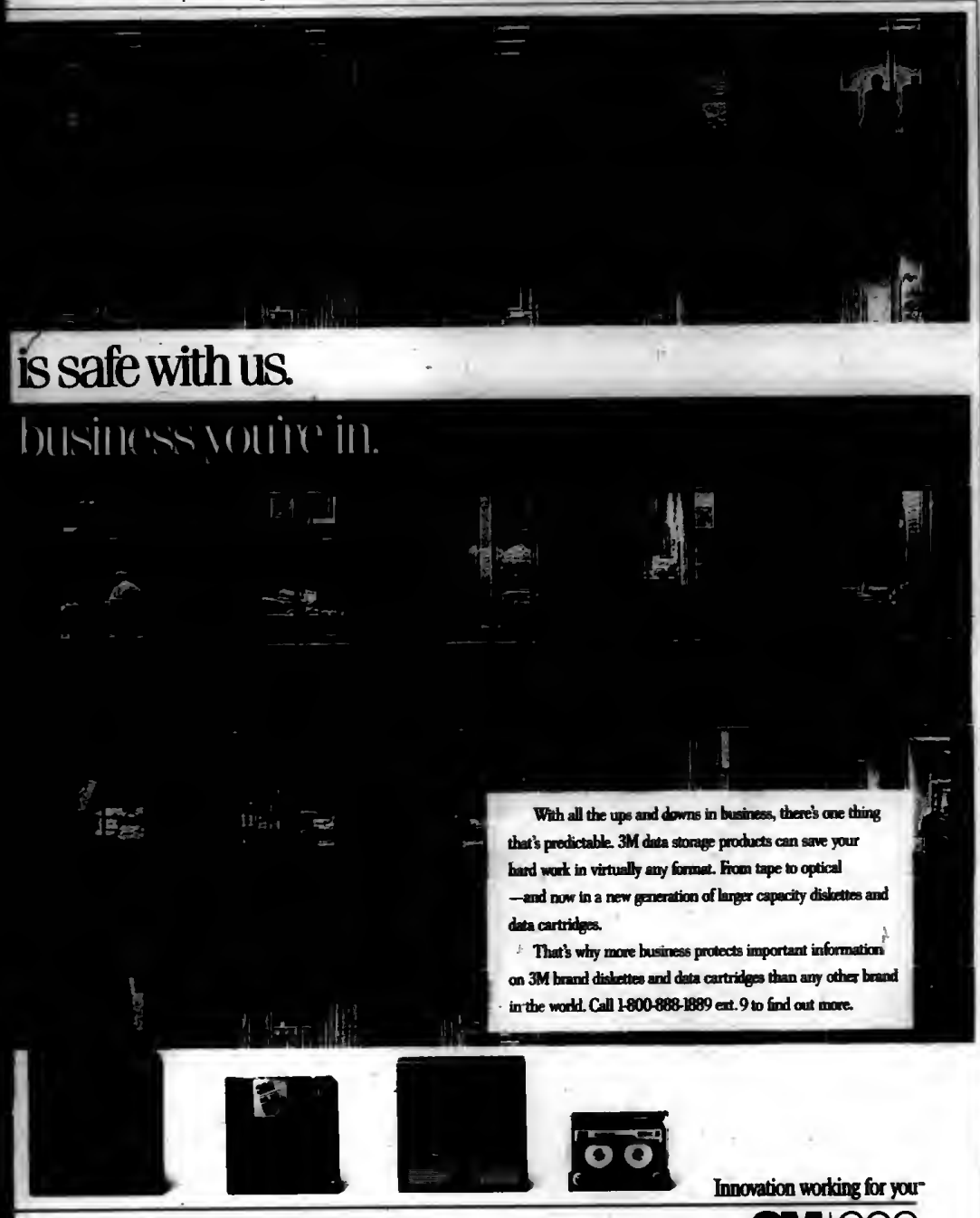
Collage Plus Version 3.1 is an image management and screen-capture software package developed by Inner Media, Inc.

The product contains a functional screen-capture program for Windows 3.0. This feature allows multiple Windows 3.0 screens to be captured in various industry-standard formats, the vendor said.

Collage Plus Version 3.1 began shipping in November and is priced at $129.

Inner Media
60 Plain Road
Hollis, N.H. 03049
(603) 465-3216

Windows product and utility files were compiled by Computerworld *New Products Writer Gary Byrne.*



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NOVELL

The Past, Present, and Future of Network Computing.

Programmers pick up paintbrushes

BY ALAN J. RYAN

While Microsoft Corp.'a Windows 3.0 is recognized as making systems easier to access for end users, information systems professionals report that it has the potential to make their lives easier as well — at least once all the pieces fall into place.

When programmers work in the graphical user interface of Windows, they can simply point and click on icons or objects that automatically set in motion tools generating code in the background. Essentially, programming in Windows can alleviate the need for the developer to write code, says Victor Ramos, project manager for commercial information services at Smithkline Beecham U.S. Pharmaceuticals in Philadelphia.

Programming tools designed for Windows can be used to "paint" applications objects (such as windows and menus) and allow graphical applications to be built graphically, Ramos says. Vendors are producing "painters" for windows, menus and even SQL. Ramos' company is currently experimenting with Powersoft Corp.'s recently released Powerbuilder product.

Martin Duffy, network end-user support coordinator at Arco Products Co. in Carson, Calif., says that at his company, Windows is being used in every department, including IS, and that developer productivity has increased.

Not every programmer with plans to use Windows for development is doing so, however.

For instance, while New Hampshire Insurance Group has more than 1,000 copies of Windows 3.0 being installed in its field offices, the firms's applications developers have not yet made the switch to Windows. It is not a lack of interest but a lack of development tools for the Windows environment that's holding them back.

While there are some exceptions, says Steve Thoeny, manager of research and development at New Hampshire Insurance, most of the 50 or so personal computer applications developers, most of whom develop for Windows, continue to develop using DOS tools while they await Windows versions of their favorite programming tools.

At Smithkline Beecham, the commercial information services department is currently using Windows for one project. It has defined two platforms for applications development: the IBM mainframe and the OS/2 LAN Manager client/server, Ramos says. For the client/server environment, he says, Windows 3.0 equipped with Microsoft Excel, Word for Windows and a 3270 emulation package are the software standards. The hardware platforms of choice are networked Intel Corp. 80386-based PCs.

Currently, Smithkline's IS group is in the process of using Windows 3.0 to complete the technical design of a work flow management system for the IS department. The system — designed to track work requests, time accounting, support call tracking and project management — will be developed and executed on the OS/2 LAN Manager platform; it will also take advantage of the capabilities of client/server technology components such as the Windows 3.0 and Microsoft/Sybase SQL Server database management systems, Ramos says.

On the lookout

At Arco Products, Windows is being used within the IS department in conjunction with products such as Gupta Technologies, Inc.'s SQL Windows and Precision Software's Superbase IV. Duffy says they are currently looking at other Windows-based programming tools.

The refinery is running Windows on 200 networked 20-MHz 80386-based PCs with 16-in. IBM Video Graphics Array monitors, Duffy says.

"Since we moved to Windows and a network at the same time, the pace of the development that we've done locally has increased quite a bit," Duffy adds.

John Robinson, director of corporate IS at Cox Enterprises, Inc. in Atlanta, says his company is currently evaluating Windows 3.0 but is also waiting to see what might happen with OS/2. Realistically, he adds, Cox will not be doing any development with Windows before next year.

Robinson says Cox will wait until it comes up with a small project to test the ease of developing with Windows 3.0.

For one national airline, OS/2 with Presentation Manager was more attractive than Windows. When Alaska Airlines IS executives in Seattle were deciding which graphical user interface to use for the airline's applications development, Windows 3.0 was not even available, says Bob Reeder, director of applications development at the $900 million airline.

However, Reeder adds, there are now some copies of Windows 3.0 in hand, and it has been compared with the OS/2 Presentation Manager. "We wondered if we should change our strategy and not buy OS/2, but it just came down to a dollars decision because OS2 Extended Edition was comparable in price to DOS plus Windows plus communication software, and you got all of that with OS/2 Extended Edition. We are running OS/2 on a server-based, token-ring network," Reeder says. •

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Decision-making prowess

Follow these guidelines, and your executive information facility will pack a wallop

BY LOUIS FRIED

Executive information systems (EIS) are not what they used to be. Rather, they're now more feature rich. Not only can executives gain access to up-to-the-minute internal company information, but they can also tie into external data, such as the Dow Jones stock ticker. The EIS is broadening in business scope; it is becoming an executive information facility (EIF).

Designed to assist top management in strategic and tactical planning for a company, EIFs can provide the ability for executives to search through gigabytes of data from external information sources for mention of competitors' activities and products or for mention of their own activities and products.

Geographic and demographic information is available in an easily accessible graphical form. Furthermore, traditional database access tools are being combined with modeling tools and spreadsheets to enhance planning capabilities.

In essence, the capability to create an executive workbench or the information driver for a corporate "executive planning center" is here. The challenge for IS managers is to match executives' needs with available functionality. In this way, they can avoid having their EIF become one of the estimated 50% of those projects that fail.

Fried is vice president of information technology consulting at SRI International in Menlo Park, Calif.

Finding a champion in the executive ranks and making the system easy to use continues to be tried-and-true advice for IS. Add to those golden rules the following guidelines, and you're on your way to a successful EIF setup:

• An IS manager should think like an executive; that is, he must be sensitive to the blend of information an executive needs for a complete decision-making picture.

Many EIF system implementations fail because they are based on the designer's misconception that corporate decisions are made on the basis of internal information only.

Providing information more quickly and in a more comprehensive form is one EIF goal but not the only one. High-level corporate decision-making requires external information such as the price of the corporation's stock, the price of the competitor's stock, sales trends for competitors and product or market trends.

Ultimately, the EIF must be able to display relationships between relevant external information and internal data to address the decision-making needs of the executive.

• IS should use repetitive prototyping to elicit the executive's information requirements for the EIF.

Robert de Michiell

Rather than asking the user to define his needs, it is far more effective to obtain his reaction to demonstrations. In this way, the executive doesn't need to understand the technology underlying the EIF.

IS needs to provide prototype displays or demonstrations using prototypical information until the executive is satisfied.

It is much easier for the user to say, "I like this blend of stock information and internal sales data" or "Move this column over to the left" than it is for the busy executive to give paper drafts or mock-ups to IS.

• IS should enable an executive's EIF to communicate and share information among appropriate parties.

High-level information has little value unless it results in actions or is communicated to others to initiate actions. Sharing information for the busy executive means the ability to send information presentations developed through the EIF to the offices of concerned executives in real time. Such sharing tools may include output to facsimile, telephone, slow-scan video with videoconferencing or even printed outputs.

More advanced information sharing may require installing the capability to transmit a display and associated notes to the personal computer or workstation of selected executives and managers through electronic mail. Beyond that is multimedia cooperative processing in which executives at different locations may concurrently view and manipulate common displays and discuss these

Continued on page 60

Defining characteristics

What makes an executive information system an executive information facility?

EISs provide an easy-to-use, often object-driven access mechanism to corporate databases or abstracts from corporate databases for information relating to the firm's operations. They generally employ a graphical user interface to provide either touch-screen or mouse controls to eliminate use of the keyboard. In addition, information is often presented in a predefined graphics display form, with a sophisticated user able to access on-line databases directly.

EIS capabilities now include fourth-generation languages for support personnel and tools that aid in accessing databases on various database management systems.

The EIS becomes an EIF with the introduction of external information access. An EIF includes EIS capabilities but adds these features: external feeds; access to external database services; videoconferencing and telephone conferencing; slow-speed video for document transmission; multilocation screen sharing; facsimile transmission; electronic mail; handwriting input to the computer and large-screen video projection; mouse, keyboard or touch-screen controls; and laser printers. Voice-activated controls will soon be available on a commercial basis.

The purpose of constructing an EIF is to gain competitive advantage for the corporation by improving an executive's access to information and decision-making aids — no matter where they reside.

LOUIS FRIED

Continued from page 59

displays simultaneously.

• IS should enable the executive's operating and support staff to have access to the EIF.

For well-rounded information content, an EIF will often include input from various operating and staff executives. Support staff such as administrative assistants can be linked into the EIF through office automation tools. In this way, the business staff members can act as information suppliers to the EIF and can abstract information for analysis.

With this linkage, executives are not limited to operational transactions or accounting information. Their EIFs can include critical decision-making information such as special intelligence gained by corporate officers and information and trend analyses not usually available through access to corporate databases.

• IS should avoid hitting executives with information overload.

In the quest to offer executives the correct and best information, IS can use the EIF as an opportunity to eliminate unused reports or summarise extremely detailed ones, often in graphics form.

As IS staff members work out the prototype with the executive, they should ask questions such as, "Is this report still needed?".

If the answer is yes, then questioning should continue along the lines of: "With what frequency should it be generated? Is the presentation suitable, or should it be graphic, tabular or in another format? Is there information in other reports that should be combined with the information in this report? Is there information that you do not now receive that you would like to have? How current should the information be in this report?"

• IS must make a support person immediately and continually available to the executive.

A business executive will likely ask for information to be presented in a different sequence or fashion, request the combination of information that has been presented separately or request the display of new information that has not previously been anticipated. This is a natural part of running a business, and the typical executive is accustomed to making such requests of staff members daily.

The EIF must not impede the executive's ability to make such requests and, in fact, must respond more quickly than business staff members. Essentially, this means dedicating technical or research people to support the EIF as a high-priority function.

Further, data manipulation, complex functions and special requests will require support staff participation for an indefinite period into the future. The executive user must understand that current technology will not always be able to provide answers to all of his questions through direct interface with the EIF system.

Special requests will continue to require the assistance of support staff until EIF systems contain intelligence and knowledge equal to that of support staff.

In this way, the IS staff can avoid having another technical success become an implementation failure.

• IS should help executives understand that the EIF's capabilities will expand over time and should also make them aware of the continuing development and support costs associated with maintaining the EIF.

The development and implementation of an EIF can be divided into four phases in which increasingly complex capabilities are provided:

Phase One might consist of providing access to existing internal files to construct executive reports or displays.

Phase Two might add displays of external information, such as the stock ticker tape or news wire facilities, videoconferencing capability and multilocation screen sharing.

Phase Three might add the manipulative capability to perform "what if" calculations according to different scenarios, or it might combine information from various files into single displays of information for the executive.

Phase Four might introduce advanced technology such as voice control, artificial intelligence or multimedia capability.

Executives should be made aware of these phases so that they realize the incremental nature of the EIF.

Initial EIF implementations should be simple to establish the executives' confidence in their ability to manage the tools and objects. Simplicity will also keep the initial version's development costs within reason and permit the first implementation to take place within a schedule that works for the user.

Because of the EIF's evolutionary development process, planning and budgeting for an EIF project must take into account the system's multiyear development and ongoing operating and support costs. IS chiefs' failure to obtain executives' understanding and agreement on these costs before the EIF development project begins will result in an unhappy executive during the next budget cycle.

• IS must provide executives with private EIF training sessions.

Executives do not generally have the time or schedule to participate in a class. Nor do they wish to appear technologically ignorant to their peers and staff.

Private tutoring is not only more effective and a more efficient use of executives' time but also permits executives to focus attention on those functions they are most interested in performing.

• IS must ensure that an EIF's functions and facilities work the first time the executive uses them and that they work consistently thereafter.

Creating an EIF exposes the system's developers to the toughest client in the corporation. Rigorous quality assurance for EIF installation and upgrades is a key consideration. The system must be adequately tested before installation and before implementing changes or new displays as well as periodically when not in use by the executive staff.

In fact, it may be wise to adopt the technique used by some military systems integrators in which the system is first completely constructed and tested at a "manufacturing" site, then disassembled, shipped, reassembled and retested at its final destination.

IS should put a copy of the EIF in the development facility as long as doing so keeps to security measures. New or prototypical displays should be developed offline and out of view of the executive and then presented for successive evaluation and comment.

The bottom line is, don't expose the executive to your mistakes.

• IS must make executives comfortable with the security of the information contained in the EIF and with the communication of that information.

Executive-level strategic planning and critical tactical planning require the utmost confidentiality in this competitive world. Therefore, EIFs must be secure, or executives won't trust them. The system must have auditable controls to ensure that unauthorized internal or external persons cannot access it, that the information will be available when the executive needs it and that the internal and external information will not be corrupted.

• IS should set up two levels of ad hoc reporting tools and methods: one for the executive and one for support personnel.

Executives need ad hoc reporting tools and methods that can access EIF files in various combinations. These tools should be in the form of "objects" that are simple for the user to identify and will perform the required function with icons, pull-down menus, touch screens or voice activation rather than keystrokes.

Knowledge of the internal workings of the system should not be a prerequisite for use.

For their part, IS support personnel need tools and methods that enable them to follow up quickly on executive requests for detailed analyses they can't do themselves through objects. Rapid response to this need requires that support personnel have tools — such as database management systems, database query aids and spreadsheets — that can meet special needs or construct new objects with minimal effort and maximum accuracy.

An EIF can be of significant value to corporate planning and control, but it can realize its full potential only if the users understand the power of the tools and the limitations of the system.

Overselling an EIF will cause unwarranted expectations and may result in the disappointment of a system developer's most important client.

You don't want to put in an expensive system that won't be used. •

Good experience

A large automobile and truck manufacturer installed an executive information facility in an executive planning center at its Japan headquarters in 1988.

Consistent with the usual Japanese corporate culture, the IS staff and company president's staff developed requirements and information displays for the custom-built system through progressive iterations and prototyping. The president reviewed and approved the prototypes and executive planning center layouts.

After approval, the company built the EIF and dedicated a number of staff members familiar with the system to support the executive's information needs.

Through his contact with the system, the president has become actively interested in developing and using the planning center and has made it a meeting place for executives.

Plans are currently in progress to add further communications facilities to the existing EIF.

Bad experience

In a major U.S. service industry corporation, a staff assistant to the president decided to acquire an executive information tool to assist in materials preparation for executive meetings.

After a brief consultation with the IS organization, the assistant purchased an executive information system. However, IS was unable to commit to developing suitable databases or to link the EIS to pertinent information, which would have turned it into an EIF. Its backlog was too big.

Instead, clerical workers entered executives' data for constructing reports into the executive system. None of the corporate executives used it directly.

To this day, management considers the system to be a costly way of preparing slides or graphics reports for distribution.

The EIS workstation is still located in the staff assistant's office and has yet to be linked to any other data resources or display facilities.

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NATIONAL
BRIEFS

Welcome, neighbor

▶ Austin, Texas-based technology research consortium **Microelectronics and Computer Technology Corp. (MCC)** gained a new member late last month: **Texas Instruments, Inc.** Formerly an MCC associate member working in the consortium's computer-aided design framework laboratory, TI is now participating in the MCC Open Systems Project, an effort aimed at creating an industry infrastructure for multichip modules.

Beyond the profit center

▶ **Supermac Technology** came up with an offbeat way of rewarding its software group for a job well done: Last week, the Sunnyvale, Calif.-based Macintosh graphics firm announced that it is spinning the software group out as a separate firm. "The new company, as yet unnamed, is engaged in a search for a high-powered, top notch CEO," Supermac said.

Graphic venture

▶ Richardson, Texas-based personal computer graphics application developer **Micrografx, Inc.** is about to buy further into the Microsoft Corp. Windows graphics tools market it is determined to lead, according to Chief Executive Officer J. Paul Grayson. In a stock-swap transaction, Micrografx will acquire **Astral Development Corp.**, whose Windows-based Picture Publisher software lets users work in an "electronic darkroom" stocked with interactive color imaging and manipulation tools. The Astral technical team will continue to develop and support Picture Publisher after the deal closes.

And share alike

▶ Under an agreement that went into effect Feb. 20, **National Semiconductor Corp.** and Japan's **Fujitsu Ltd.** will be cross-licensing each other's semiconductor products for the next decade. The pact covers current patents as well as those applying to products developed by either firm while the agreement is in force — an arrangement expected not only to increase each partner's semiconductor strength, but also to ensure that at least two major manufacturers will not be seeing each other in court over semiconductor patent rights in the next 10 years.

CA looks to calm concerns

Vendor's No. 1 spot threatened by Microsoft, no major changes foreseen

BY JOHANNA AMBROSIO
CW STAFF

GARDEN CITY, N.Y. — The symptoms are similar to the last time Computer Associates International, Inc. suffered from depressed revenue and earnings, but this time the malady is quite different.

The last financial pratfall was caused by problems stemming from CA's acquisition of Cullinet Software, Inc. in 1989, which cost almost $1 billion. This time around, the issues are how CA can keep growing a $1.3 billion company and where that growth will come from.

Can the company keep its targeted pace by providing its traditional systems, applications and database software on new platforms such as Unix, or will it be forced to more aggressively target "hot" markets such as microcomputer software, analysts ask.

As the past three quarters of decidedly unstellar financial results has shown, these challenges may be far more difficult to resolve than were the issues surrounding the Cullinet deal.

Still, by most accounts, CA is a boisterously healthy company, and there are signs that its growth could begin to pick up by the end of the calendar year.

It will not be easy. CA's days as the world's largest independent software vendor are coming to a close. Microsoft Corp., which reported larger quarterly earnings and revenue than CA for the period ending Dec. 31, is expected to exceed CA on a yearly basis by the end of this year.

Microsoft's onslaught comes at a time when CA, which appeared virtually unassailable several years ago, is battling back from financial woes and Wall Street worries (see story page 64).

Nevertheless, few are counting CA out. The company continues to be extremely sound financially with an excellent cash position, according to analysts, and could even return to a 15% or 20% growth path.

"Even though it's having some problems, CA is a healthy company that's just not performing up to its potential," said James Mendelson, an analyst at Morgan Stanley & Co. "While the future is unclear about how fast they can grow, they have remained throughout their history, innovative, tenacious and aggressive. They will ultimately resolve their problems."

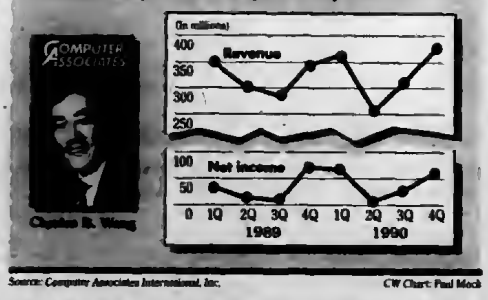
Terry Quinn, an analyst at Kidder, Peabody & Co., noted CA's continued growth at high rates despite the slowdown in mainframe sales that dates back at least eight years. "There's still a need for systems software because the hardware is 10 to 15 times more powerful than it was six years ago, and that requires new operating systems and software to manage it," he said.

Not everyone agrees that the future is so rosy. "They're not looking in the correct places for growth," said Charles Phillips, an analyst at Stamford, Conn.-based Soundview Financial Group. "They need new, hot products, and I don't see any on the horizon. And their older products need rejuvenation, but that can't be done very quickly."

Of course, CA has bounced back before. The company went through some rough quarters after it announced the Cullinet acquisition back in 1989 — although it remained profitable throughout the period. Customers put their purchase plans on hold until they were comfortable with CA's product development and support strategies. When sales rebounded, CA's growth returned to pre-Cullinet rates of 35% growth per quarter until June 1990.

Stumbling but not falling

Despite the peak and valley ride of its cash flow, CA remains very healthy financially and is on its way to another peak



Source: Computer Associates International, Inc.
CW Chart: Paul Mock

No major changes

For their part, CA executives said, no major strategy shifts are planned, and the company will continue to provide its diverse software lines on different hardware platforms. "I can't honestly say that we're putting anything on the back burner," Chairman Charles Wang said.

A major systems software announcement slated for August is still on target, he added.

CA has managed to diversify its revenue stream somewhat; Quinn estimated that some 70% of revenue is derived from systems software products. That number is down from 80% one year ago, he said. CA executives, while not releasing specific figures, said the database management system part of the business is growing, and CA is attracting new clients with those products.

Although CA will not become known as a personal computer software company anytime soon, it is devoting more time and energy to that side of the business. The Microcomputer Products Division was recently reorganized; although most of its employees will remain in San Jose, Calif., division headquarters are now in the corporate office here. The company also recently acquired a multidimensional spreadsheet called Compete, and CA executives hinted that Windows is central to their PC strategy.

Moreover, according to Wang, PCs already loom larger than it might appear in the CA

Continued on page 64

Far East isn't recession cure-all

ANALYSIS

BY ELLIS BOOKER
CW STAFF

CHICAGO — As the U.S. economy heads south, is it time to look east?

Facing a recession at home, is it feasible for domestic technology companies to seek opportunities elsewhere, specifically the Pacific Rim?

No, said John Wark, vice president of marketing in the Applications Software Division at software firm Pansophic Systems, Inc. Don't expect to play a Pacific Rim card to get yourself out of the stateside slowdown. "It's just too late," he said.

Wark and other computer company executives recently noted that the time — on the order of a couple of years — and expense of setting up such arrangements defeats the goal of using such a strategy tactically rather than strategically.

Export oriented

Nevertheless, cautioned one industry observer, neither should firms put global expansion on a back burner because it is not an overnight cure for recessionary woes. While today is not an optimal time to begin a foray internationally, "it's always wise to go into Asia because, in the long term, we need to be export oriented," said Sheridan M. Tatsuno, president of Neoconcepts, a consultancy in Fremont, Calif.

However, Asians are wary of attention from across the sea if it comes when the U.S. economy is gloomy, Tatsuno warned.

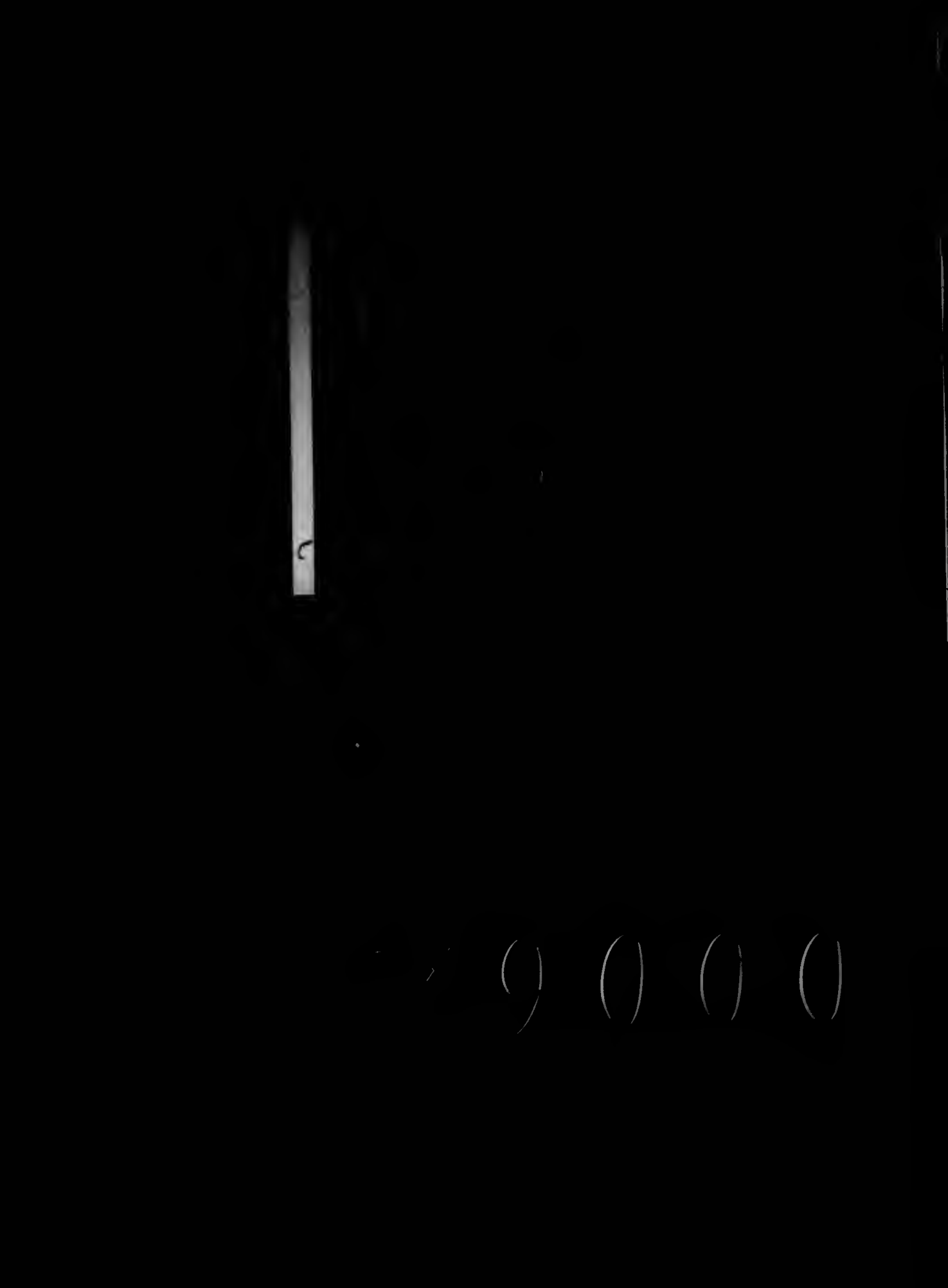
"The concern of Asian buyers is that you are trying to unload inventory . . . and that when there is a recovery they'll be cut off," he said.

A legitimate worry for these buyers, he said, is that because U.S. manufacturers run at fairly high capacity, they may run out of capacity during a domestic economic recovery and will cut their Asian business back to satisfy their domestic market.

"It leaves [Japanese customers] begging for parts," according to Tatsuno.

A final problem, analysts agreed, is a cultural one: Americans emphasize pragmatic "contractual obligations" in their business dealings, while the Japanese are more likely to focus on "social obligations" and long-term relationships be-

Continued on page 65



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Industrial espionage with U.S. runs rampant

BY MICHAEL ALEXANDER
CW STAFF

Glasnost may have occasioned a thaw in East-West relations, but many of the spies who have come in from the cold are as busy as ever. Instead of spying on each other, however, foreign intelligence agencies are focusing on industrial espionage, with U.S. technology one of the prime targets, according to several security experts.

Former foes are not the only worry, however. Longtime allies are also said to be prying into U.S. technological interests. In November, W. Douglas Gow, a Federal Bureau of Investigation assistant director who heads foreign counterintelligence operations, confirmed reports in a television interview that France's General Director of Exterior Security tried to hire employees in the European offices of IBM, Texas Instruments, Inc. and other U.S. electronics companies to provide information for pay.

The French agency was attempting to gather research and marketing information for Compagnie des Machines Bull, which is owned primarily by the French government. The scheme, which took place in 1987 and 1988, was uncovered by the Central Intelligence Agency and the FBI, Gow said.

The company viewed the incident as a "government-to-government thing" and refused to comment further on the snooping charge, according to a TI spokesman. The company also declined to talk about information security at any level, citing "internal reasons" and concern that it might encourage snooping by outsiders. IBM did not return calls seeking comment.

Such reluctance to comment on industrial spying is typical, said Dick Heffernan, president of R.J. Heffernan Associates, Inc., an information security firm in Branford, Conn. Heffernan is also chairman of the American Society for Industrial Security's committee on safeguarding proprietary information.

"Most companies do not want to talk about loss of information because people will think their competitive position has been damaged, and they don't want the value of their stock eroded," Heffernan said.

As more U.S. corporations expand their businesses worldwide, the problem of information theft by professional snoops will likely worsen, Heffernan said. The awareness of this potential risk is "not at a level we are pleased with," he added.

Industrial spying by foreign intelligence agencies, often at the request of their domestic corporations, is the tip of the iceberg, according to Stephen Bryden, president of Deltatech Corp. in Arlington, Va., and a former deputy undersecretary of defense for trade policy. Industrial espionage by foreign intelligence agencies is increasing and aimed squarely at U.S. computer and electronics industries, Bryden and other experts said. "Clearly the Western Europeans and Japanese have made up their minds where the real competition with us will take place."

U.S. intelligence agencies have reputedly refused to carry out industrial spying against their allies so far, but that may change. Senior officials at the CIA and the National Security Agency have publicly said the agencies are mulling over the prospect of putting more effort into gathering industrial information. But Bryden, among other security experts, said more effort should be put into assisting U.S. corporations in protecting their information.

"Spying on the Japanese is like spying on ourselves — most of the stuff originates here," Bryden said. "They really need to go out and protect U.S. companies internationally and externally to make us more competitive. They should be helping check their own facilities to see what the risks are."

Skyrocketing costs

The theft of information gleaned from computers and communications networks may be costing U.S. corporations billions of dollars per year, according to Noel Matchett, a former staff member at the National Security Agency and current president of Information Security, Inc. in Silver Spring, Md.

There may never be a way to find out exactly how much electronic snooping is costing U.S. businesses, however. The interception of communications or unauthorized access is rarely discovered, and there is no clear evidence of theft, according to Matchett.

Few companies are even aware that this sort of electronic eavesdropping is going on and are skeptical when alerted to possible security breaches, said Thomas Sobczak, vice president of Application Configured Computers, Inc., a security consulting and software publishing company in Baldwin, N.Y. The three-employee company also maintains a database of classified and sensitive information that has leaked out of federal agencies and large corporations.

Bond — James Bond

It apparently does not take the skills of James Bond to be an effective electronic snooper.

In the mid-1960s, Wim Van Eck, a Dutch engineer, proved how easy it is to pick up electromagnetic emissions from computers and peripherals by aiming a homemade electronic interception system at the Amsterdam Postal, Telegram & Telegraph office and tapping into its computers.

A "Van Eck listener," as the eavesdropping device is sometimes called, is effective up to several hundred yards and can be made "for $400 max," according to Ian Murphy, founder of IAM/Secure Data Systems, Inc., a Philadelphia-based security consulting firm.

Computers and communications networks are "wide open" to electronic eavesdropping, said Glenn Whidden, who served in the CIA for 28 years and is now a principal at Technical Services Agency, Inc. in Fort Washington, Md. His firm designs and markets equipment for detecting illicit listening devices. A telephone tapping device that is virtually impossible to detect can be assembled from $25 worth of parts from Radio Shack, Whidden said.

"Intercepting fax is a piece of cake; microwaves and satellite transmissions are free for the taking," said Stephen Bryden, president of Deltatech Corp. in Arlington, Va. Wireless local-area networks based on infared or spread-spectrum radio technologies, which have been introduced in recent years, may also be vulnerable to electronic snooping.

Wireless networks that use spread-spectrum frequency technology are in fact more secure than wired networks because intercepting the signal is more difficult, countered Scott Schafer, director of U.S. workstation marketing at NCR Corp. He oversees the marketing of NCR Wavelan, the company's new wireless LAN interface card for Novell, Inc. LANs. "The signal is spread over several frequencies, and unless you know the spreading code and are able to reassemble the signal the way it was transmitted, all you see is garbage," he said.

An intruder could acquire the spreading code by surreptitiously reading the switch settings on the Wavelan card, Schafer said. However, the snoop would still have to break through Novell's Netware security. NCR offers an optional data encryption standard chip set for the interface card as well.

MICHAEL ALEXANDER

To top it all off . . .

Adding to CA's problems is the lack of direction company executives have given Wall Street, according to several analysts — a shortcoming to which CA executives have publicly admitted but which the analysts said they have taken no real steps to resolve.

This, along with the usual difficulty of following a firm as large and diverse as CA, adds to the executives' confusion about where CA is heading and how fast it will get there, analysts said.

Many major securities firms continue to rate CA's stock a "hold," largely because of the uncertainty.

"They're hurting themselves because they're not talking to the Street as openly as they should," said analyst Terry Quinn at Kidder, Peabody & Co. "They're a tough animal to follow."

Charles Phillips, an analyst at Soundview Financial Group, agreed: "It's very difficult to recommend the stock when they're not talking at all," he said. One reason for this reticence, he suggested, is a still-pending stockholder suit filed in the wake of CA's disappointing June 1990 quarter. About one dozen such suits were originally filed.

Although such suits are not unusual when a company reports results that are much lower than expected, as was the case in June, it has made CA management very careful about what they say publicly about the company's finances.

JOHANNA AMBROSIO

CA

FROM PAGE 61

product mix. Many existing PC products, such as microcomputer versions of its database software, are not counted as such because they are not sold through the retail channel, he explained. "No one hears about them because they're categorised as part of the mainframe business."

Analysts said they expect revenue derived from other products to play a larger role one year or more down the road. CA's recently announced agreement with Hewlett-Packard Co. to jointly develop Unix software should start to yield products by the end of the year, several analysts said, and CA's share of the Digital Equipment Corp. systems software market should keep growing as well.

Another continuing issue at CA, according to Quinn, is sales force management. Within the past two years, CA has adopted an IBM-style account executive model, but it is still having some problems "upstreaming" the sales force, he said.

"There are some internal problems," Quinn said. "The account exec structure, while good, is still pretty new. They're trying to adjust to that, but it will take time.

"They're not holding salesmen to quota on a monthly basis, although on a yearly basis they are," he said.

Work to do

Moreover, CA still has work to do to wean its sales force away from the tendency to rely on a few large sales rather than concentrating on making smaller, more numerous ones, according to Quinn. "They need to motivate the sales force to avoid that hockey-stick curve and get back to a normalized level of growth," he said.

Wang maintained that the company's sales force issues are well in hand. "We think we're making good progress," he said.

Wang also confirmed that the company will continue to grow by acquisition complemented by internal development. There have been at least three acquisitions since Cullinet, although none as high profile, and more are in the works, he added.

Meanwhile, Wang said, being knocked out as the leading independent software company does not bother him.

"We've never said we want to be the largest; we've always said we take greater pride in being the best," Wang said. "Whether Microsoft is bigger or smaller doesn't matter. We've always wanted to build the company, help build the industry, protect people's investments and maybe be a significant player. Ten years from now, we'll still be doing the same things — maybe just on more diverse platforms."

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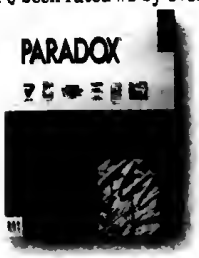

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INTERNATIONAL BRIEFS

Sharp thinking

▶ **Japan's Sharp Corp.**, a pioneer in LCD technology, is about to give the U.S. its first mass-production large-scale LCD plant. To be organized as an autonomous part of Camas, Wash.-based Sharp subsidiary **Sharp Microelectronics Technology, Inc.**, the plant, which is expected to open in December, will cost its parent nearly $30 million and should create some 250 new jobs in its first two operating years, according to Sharp Executive Vice President Atsushi Asada.

Piracy, part I: Watchers

▶ **Thailand, India, the People's Republic of China** and **Indonesia** led a list of 22 countries targeted by the Washington, D.C.-based **International Intellectual Property Alliance** as failing most notoriously to provide adequate copyright protection or fair market access to U.S. wares. In addition to the four leading offenders, seven more countries have been placed on the U.S. Trade Representative's "priority watch list."

Piracy, part II: No act, no pact

▶ The **Software Publishers Association (SPA)** and the **Business Software Alliance (BSA)** joined forces last month to urge the U.S. House Ways and Means Subcommittee on Trade that a free trade agreement with **Mexico** be signed only if Mexico first signs into action a copyright law that will protect U.S. intellectual property. Its provisions, according to SPA/BSA testimony, would cure three deficiencies of current Mexican copyright law: no explicit protection for computer software, virtually nonexistent infringement penalties and an exemption for so-called "private" copying.

No fair

▶ **Sicob 1991, France**'s computer, telecommunications and office equipment trade fair scheduled for April 22-27 and October 2-5, will not be held this year, exhibition organizers in Paris announced last month. Organizers said that professional computer industry organizations pressured them to cancel the show. While mentioning the effects of the Persian Gulf war, they also noted that Sicob has been suffering a severe drop-off in attendees and exhibitors in recent years.

Japan may find closed doors in Europe

ANALYSIS

BY ELIZABETH DE BONY
IDG NEWS SERVICE

BRUSSELS — If European Roundtable Esprit's action early last month is any indication, Japanese firms that acquire European companies might be about to discover that they are sowing their global oats in something less than fertile soil.

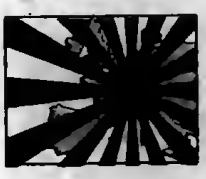
Esprit voted to exclude from membership UK-based International Computers Ltd. (ICL), a subsidiary of Japan's Fujitsu Ltd. since last summer. Within the next several weeks, the managing board of the Joint European Submicron Silicon Initiative (JESSI) project is expected to announce its decision about ICL's continued participation in research projects into the next generation of supersilicon conductors now afoot.

Europeans only

ICL was a founding member of the roundtable when it was launched in the late 1970s with a view to promoting the international competitiveness of European industry. The motivation for ICL's exclusion stems from the opinion that because the group's purpose lies in promoting Europe's competitive position vis-a-vis its Japanese and U.S. rivals, "it is important that the roundtable comprises companies that are truly European-owned," according to a statement issued by the group. Following Fujitsu's takeover of ICL, the statement said, "regrettably, therefore, ICL has to leave."

Although the roundtable started off with 12 members, it has now been whittled down to nine because of the GEC-Siemens AG takeover of UK-based Plessey PLC and Siemens' subsequent acquisition of Germany's Nixdorf Computer AG. In addition to Siemens/Nixdorf, the roundtable's members include, among others, Germany's AEG; France's Alcatel and Groupe Bull; Italy's Ing. C. Olivetti & Co. and STET; and Netherlands-based NV Philips and STS-Thomson. An ICL spokesman expressed the company's mild disappointment in the roundtable's decision, stressing that "ICL is still a European company by all the criteria set out by the EC, but the members of the roundtable took a different view." The firm will still participate in Esprit, the European Community's (EC) research program in information technologies, and any move to exclude it "would seem strange in view, for example, of IBM's participation," the spokesman said.

ICL is an active member or project leader in nine of Esprit's many programs. Participation in EC projects is subject to certain objective requirements that ICL continues to fulfill — notably regarding the obligation to carry out research in the EC and share projects with at least one other company from another member state.



Nevertheless, industry analysts said that despite these rules, the bottom line is whether partners in a project want to participate with a specific company in a new project or continue participating in an existing one. So, within Esprit, while there will never be a political decision to exclude ICL, in practice, the forecast for continued participation is less certain.

Some participation permitted

Analysts suggested, for example, that the other Esprit participants will continue to allow ICL's participation in projects regarding the development of new information technology standards but that the firm may be slowly edged out of others.

At JESSI, a spokesman confirmed that during its Jan. 30 meeting, the management board had been scheduled to discuss the issue of ICL's continued participation. In November, the board had asked all five project leaders in which ICL participated to make a report analysing the company's role. But because one of the five had not produced the necessary report, the entire discussion was put off until March, the spokesman explained.

ICL has expressed some optimism for its continued participation in JESSI, pointing out that it is there as a user, not as a manufacturer of chips. Moreover, IBM has also been accepted for participation in the program, according to sources.

However, JESSI's management board of eight firms has many of the same members that sit on the information technology roundtable, including Alcatel, Siemens/Nixdorf, Philips, Olivetti and STS-Thomson.

Nevertheless, Europe's information technology leaders may decide to make a distinction between allowing quasi-Europeans to continue participating in technology programs and allowing them to share in top-level political discussions setting out strategies for the future. But in the end, as stated, participation depends on the other companies involved in a specific project.

Industry expert John Robinson, partner at the Brussels-based consulting firm Robinson Linton Associates, questioned the roundtable's continued influence over EC policies and projects. He explained that the EC's ongoing effort to develop trans-European networks for telecommunications has emphasized the need for input not only from the suppliers in the roundtable but from users as well.

As a result, although the roundtable may expel ICL, Robinson said that "the duration of the roundtable's monopoly on industry input into the EC's information technology policy may be short-lived."

De Bony is a Brussels-based correspondent for the IDG News Service.

Far East

CONTINUED FROM PAGE 61

tween parts suppliers, vendors and customers.

A bright spot may be the opportunities for relatively small U.S. companies to ship basic technology into Pacific Rim countries and elsewhere before the Pacific Rim and other competitors get their own products to market.

One approach, Tatsuno said, is to develop a base technology and license it before these larger competitors make the innovation a commodity product.

But the window is short. By some anecdotal accounts, Taiwanese firms are able to knock out a working prototype of a U.S. firm's computer board within three weeks and have a product to market within one month.

Pursuing patents

Energy Conversion Devices, Inc., an innovator in amorphous and synthetic materials technology since the 1960s, is one company following the patent pattern.

Early last month, the Troy, Mich.-based company announced that consumer electronics company Matsushita Electric Industrial Co. would license its "phase-change" technology for read-write optical discs. These discs will reportedly be sold in the U.S. under Matsushita's Panasonic Co. label.

Matsushita has already begun production of the 1G-byte, 5¼-in. direct overwritable optical disc, the first commercially available phase-change product in the world, according to the company.

The Pacific Rim already accounts for one-half to two-thirds of Energy Conversion's total $14 million to $20 million in annual revenue. Sources at Energy Conversion said last month that the company had signed a second $10 million joint venture agreement with the Soviet Union to develop new types of amorphous thin-film semiconductor computer memory devices.

Other goals

However, Energy Conversion is not just a research and development outfit satisfied with getting patents, selling licenses and receiving royalties, according to President and Chief Executive Officer Standford R. Ovshinsky.

"We have a new technology with a large potential," Ovshinsky said, referring to the company's phase-change optical memory technology.

Energy Conversion is currently involved in a joint development project with a U.S. manufacturer of consumer electronic products for a noncomputer application of its optical memory system.

Foreigners still come to the source, Ovshinsky maintained. "Size and money," he added, "do not make up for invention."

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Trax Softworks, Inc.

PC chip set firm loses monopoly, maintains edge

BY MAURA J. HARRINGTON
CW STAFF

SAN JOSE, Calif. — Chips & Technologies, Inc. has lost its monopolistic position in the personal computer logic chip set market. Nevertheless, the firm still holds the dominant market position despite some weaknesses and slowdowns during the past couple of years, according to various analysts.

"I think the company began to get a little bit too fat, dumb and happy a couple of years ago when their competitors came in and snuck up on them," said Rick Whittington, an analyst at Kidder, Peabody & Co.

Despite a loss in market share to new competitors such as Milpitas, Calif.-based LSI Logic Corp. and San Jose-based VLSI Technology, Inc., Chips & Technologies still dominates the very large-scale integration chips market, according to Dean McCarron, a semiconductor analyst at Instat, Inc., a market research firm in Scottsdale, Ariz.

> "I THINK THE company began to get a little bit too fat, dumb and happy a couple of years ago when their competitors came in and snuck up on them."
>
> RICK WHITTINGTON
> KIDDER, PEABODY

Moreover, McCarron said, Chips & Technologies has a chance to gain market share in the high-end peripheral PC chip set market with its new company focus and products aimed at the notebook and laptop arenas.

Dominant supplier

Michael Slater, president of Micro Design Resources, Inc., a market research firm in Sebastopol, Calif., agreed with McCarron.

"Certainly, Chips remains the dominant supplier in the chip set business, and I think they are also one of the only chip set vendors to have an active microprocessor plan in place," Slater said.

He added that this "is an important strategy for the future as peripherals and central processing units begin to mold into one."

Indeed, one of the company's major strategies to be implemented this year includes continued research and development on its "PC on a Chip" product as well as other shrunken chip sets with increased capabilities being worked on for the laptop and notebook market, according to Douglas Finke, strategic planning manager at Chips & Technologies.

"We are making a product transition across all of our product lines this year to target new business opportunities such as the multimedia market, software accelerators, flat-panel color graphics and multiprocessing," Finke said.

Nynex Australia out of race for the No. 2 telecom spot

Withdrawal could open up opportunities for other carriers

BY NOEL BENNETT
SPECIAL TO CW

SYDNEY — Nynex Australia PTY Ltd., considered to be one of the dark horses in the bidding to become Australia's second telecommunications carrier, has dropped out of the race.

The local operation is the offshoot of New York-based Nynex Corp., a regional Bell operating company that enjoyed revenue of $13.2 million in 1989.

The withdrawal followed closely on the heels of reported similar actions by British Telecom and U.S.-based GTE Corp.

In late January, Kim Beazley, Minister for Transport and Communications, said more than 30 expressions of interest had been received to establish a second carrier based on the purchase of Aussat, a satellite communications company.

In its announcement, Nynex Australia said Nynex Corp. had based its business decision on current strategic corporate assessments.

Industry sources said this could point to opportunities for investment available in other parts of the world, including Singapore and South America. Such alternatives and current unsettling factors pertaining to the bid, such as the purchase of Aussat and various interconnect and resale conditions, could well mean that the number of intending parties could fall even further, sources said.

Nynex Australia said it had participated positively in all of the processes undertaken to date in the second carrier selection program and added that it "hoped it had made some contribution" to the handling of this "demanding" task.

Still on the lookout

While Nynex Australia's staff will be withdrawn, Nynex will continue to monitor and evaluate telecommunications industry opportunities in the Australian market, the company said.

Beazley said expressions of interest were considered throughout February, and detailed proposals are now being sought from the consortia. A short list will be drawn up, and tenders will be invited. The sale of Aussat is scheduled to be completed by Dec. 31.

Meanwhile, traffic between the U.S. and Australia is set to increase after agreements made between OTC, Australia's international carrier, AT&T and other U.S.-based international telecommunications organizations for cuts in the telephone accounting rates between the two countries.

These cuts will lower the Australia/U.S. accounting rate by at least 12.5% from mid-1991, according to an OTC spokesman. This would be followed by a sequence of reductions during the next three years. Details of cuts in the U.S./Australia accounting rate were not available.

Accounting rates are the basis for payments from one international carrier to another for having calls connected at the distant end.

OTC Managing Director Steve Burdon said OTC had made tariff reductions, saving its customers a total of $41.8 million in fiscal 1989-1990 and an additional $16.5 million this financial year. Lower accounting rates were an important factor in these price cuts. The mid-1991 accounting rate reductions will be taken into account when OTC reviewed its tariffs in the second half of 1991, Burdon said.

Other ways of making further price cuts will be sought, including taking advantage of the new Pacific Rim fiber-optic cable networks and making better use of digitization of traffic now carried by traditional analog cables, the spokesman said.

In noting that the UK and the U.S. had recently foreshadowed major accounting rate reductions in trans-Atlantic routes, Burdon said similar rate reductions had also been planned with OTC's European counterparts.

Bennett writes for Computerworld Australia, *an IDG publication.*

EXECUTIVE CORNER

Ask Computer invites Sharpe

Robert N. Sharpe, vice president of business development at **Electronic Data Systems Corp. (EDS)** has joined **Ask Computer Systems, Inc.**'a board of directors, Ask announced last week. The selection of Sharpe, a 19-year EDS veteran, comes in the wake of EDS' $40 million purchase of a 20% stake in the Mountain View, Calif.-based business software firm last fall.

Jeff Bork, vice president of marketing at **Informix Software, Inc.** in Menlo Park, Calif., for the last two years, left the company Feb. 15, Informix announced. Bork's departure stems from a mid-January reorganization that reduced development of the Wingz graphical spreadsheet he had championed. Informix has split the marketing position, naming **Gilbert Wai** vice president of product marketing and **Bob Macdonald** vice president of corporate marketing.

Leo Nikora, until recently marketing manager at Redmond, Wash.-based integrated circuit programmer maker Data I/O, is the new president of Seattle-based word processing software developer **Quicksoft, Inc.** Not only did Nikora ascend to the presidency, but the 25-year industry veteran bought the company. **Bob Wallace**, Quicksoft's founder and former president, traded his management post to become a full-time software developer at the company.

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Fast Track is a monthly column dedicated to answering questions on career directions.

BY STEVE B. FOGLE,
MICHAEL R. HELFT
and W. RICHARD HOWARD
SPECIAL TO CW

Q I've spent the last four years in Europe performing systems integration/project management work for a U.S. corporation. Altogether, I have 14 years of experience in the computer industry ranging from software development to systems integration.

Is my experience in Europe something I should promote when I look for another job in the U.S.? How can I conduct an effective job search from such a long distance? I will need to give several months notice prior to leaving my current job.

A Your current European experience is a valuable asset, whether in the U.S. or abroad. Companies are putting a premium on overseas experience as international businesses begin to operate in global markets.

In terms of searching for a job in the U.S. while you are still in Europe, the best thing to do would be to set up a fact-finding trip to the U.S. before you leave your current employer. Send targeted letters and resumes to systems integrators, related computer consulting firms and recruiting firms informing them of your job, salary and geographic requirements. Once you have had your first round of U.S. meetings and you have determined some definite possibilities, then you will be in a good position to give several months notice to your employer.

Q I am currently vice president of data processing at a community bank. I have experience on IBM's System/36s and 34s. I program in RPG with self-taught structured code. In my position, I wear many hats: I budget, plan and perform other supervisory duties in addition to my technical obligations.

Recently, I've noticed that many technical and trade journals indicate that entry into the Application System/400 environment may be tough for a person in my position. Just how tough might it be?

A Entry into an AS/400 environment is not difficult. The demand for people who are capable of managing an AS/400 installation is very high, particularly from organizations that are upgrading from System/36s and companies that are downsizing from mainframes.

Becoming proficient in an AS/400 environment with a System/36 or 34 background is relatively easy. There are dozens of classes and self-study courses available that are specifically designed with this objective in mind. With your ability to handle technical and management tasks, you should find today's marketplace very responsive to your skills and capabilities.

Q I have bachelor's degrees in accounting, finance and computer science. I have more than four years of experience working strictly in a business setting, three years developing software and project orientation and two years working as a systems analyst in a production environment. I am currently employed by a well-known airline as a programmer analyst with a salary of $31,500.

I would like to gain experience in large-scale databases such as IMS and DB2, earn more money and get a better footing on a career path, but I feel I'm not getting anywhere.

A Investigating opportunities shouldn't be something you do only when making a job change. Continue your education, extend your network, go on an occasional interview and network with your peers on a regular basis. Throw yourself into the job market. Look back at the accomplishments you have made and leverage them. You have an excellent educational background and good job skills. Sell this experience.

Your compensation does seem to be a little below average, so you need to evaluate your current position and look at other opportunities. Considering your background, you should look at consulting organizations and other major IS environments and maybe even reintroduce yourself to your former employers.

Q I have been seeking a position in the computer field since I graduated from college last August. I have an associate's degree in computer information systems and no experience in the field. Many interviews I went to want someone with experience. I've sent out several resumes, but all I've received are rejections.

In the future, I plan to study for a bachelor's degree in computer science. My goals are to become a computer programmer and then a systems analyst. What would you advise me to do to get my first job?

A For now, explore every avenue available: Contact your college placement office, respond to every closely applicable job advertisement and contact every employment agency and search firm that specializes in your field. In addition, identify 25 companies you would like to work for, and make contact with the appropriate hiring manager or recruiter. Ask for courtesy interviews if they are not currently conducting a search. Never let someone say no to you without giving you a lead or someone else to contact. If possible, make at least five contacts each day by telephone or in person through interviews.

A job search can be a full-time job, so plan your day, make goals for yourself and stick to them.

Fogle, Helft and Howard are executives at Korn/Ferry International, a senior-level management search firm based in New York and Los Angeles.

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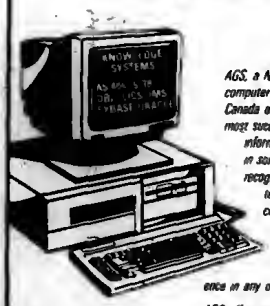

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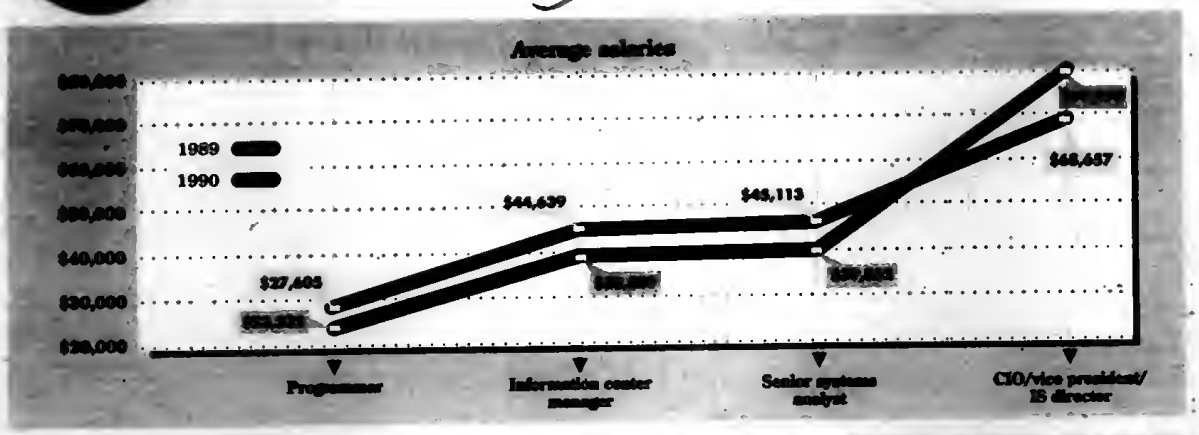

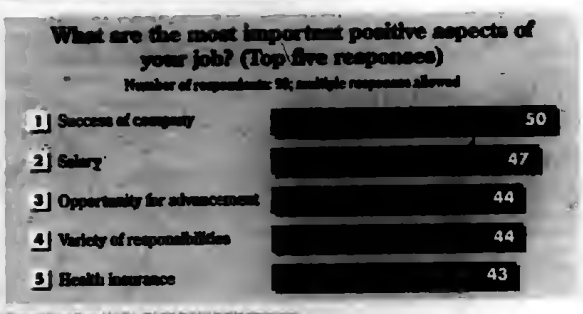

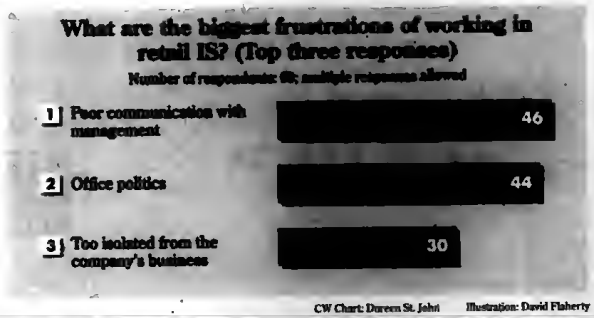

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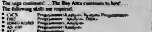

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How to pick a hot site haven before the going gets tough

BY ALAN RADDING
SPECIAL TO CW

No facility is absolutely fail-safe. No matter how carefully information systems managers build their data centers and no matter how much backup capacity they provide, any single facility is vulnerable. Even if the facility is not put out of commission in a disaster, IS operations will be effectively out of business anyway if the surrounding community is not functioning. That's why many companies are turning to hot sites to ensure continuing computer operation.

Hot sites offer varying degrees of disaster recovery services. To choose the right site, IS managers or disaster recovery planners must balance equipment needs with geography requirements, cost, support and service, telecommunications capacity, availability for testing and the vendor's myriad procedures and practices.

Leading the recovery site industry are Comdisco Disaster Recovery Services, Inc. in Rosemont, Ill., Sungard Recovery Services in Wayne, Pa., and IBM Business Recovery Services in Franklin Lakes, N.J.

Despite its prominence in the computer industry, IBM is the new kid on the block, springing into the market in 1989. However, because of its size and capabilities, IBM immediately became a major player. Meanwhile, Comdisco and Sungard have been butting heads for more than a decade.

The rest of the hot site vendors are viewed as niche players that specialize in uncommon platforms or focus on a specific geographic region. Some of these vendors, such as National Dataguard Technologies in Breckville, Ohio, are dedicated disaster recovery companies, while others are spin-offs from large diversified companies, such as Seattle-based Weyerhaeuser Recovery Services, the offspring of the giant forest products company.

The price you pay

Although users don't always want to admit it, the No. 1 issue in selecting a hot site is price, which can vary widely among vendors. For example, the United Mine Workers of America (UMWA) Health and Retirement Funds organization in Washington, D.C., found significant price differences between disaster recovery vendors when it started looking around. "Weyerhaeuser was significantly cheaper in overall cost," says Harvey Hodges, group manager of data processing services.

One major vendor wanted $60,000 just to develop the recovery plan while another quoted $35,000 for the same service. Hodges estimates he saved as much as 65% overall by going with Weyerhaeuser, which included planning consulting as part of its overall service.

The larger the company that is buying services, the better chance it has to negotiate hot site prices. "We found them all to be competitive, but there was an opportunity to tailor the contracts, to negotiate the price," says Emery Hill, executive officer at C&S/Sovran Bank in Norfolk, Va. Before selecting Sungard, the bank also looked at IBM and Comdisco.

IBM, at least at first, heavily discounted its fees to attract customers. "We were one of IBM's first customers, so they came in with a very aggressive price," says Jerry Scherkenbach, information services officer at Milwaukee-based Firstar Information Service Corp., the data processing division of Firstar Corp., a bank holding company.

For most companies, a high-ranking consideration in choosing a hot site is a sense of security. In some cases, disaster planners cling to the major players because of their size and experience. "We determined that we wanted a disaster recovery vendor with a lot of proven experience or that they be a major equipment supplier," says Scott Culbertson, manager of security systems at Shared Services Center in Harrisburg, Pa., the computer services arm for several Blue Cross/Blue Shield organizations.

However, others indicate that good things come in small packages. Hodges chose Weyerhaeuser for the comforts of a small operation: "We wanted exclusivity and confidentiality." In the event of a disaster in Washington, D.C. — a massive power outage, for instance — he didn't want to be one of a herd of data centers stampeding to the same recovery site.

Weyerhaeuser only accepts one data center from a designated territory, and UMWA has the Baltimore to Richmond, Va., territory. Comdisco and Sungard limit subscriber numbers at each site to approximately 100. IBM does not limit the number of subscribers.

Don't cry wolf

To assuage concerns about being locked out of a recovery site during a widespread emergency, the leading vendors tout multiple centers that can back up one another and pick up overflow. Typically, space is available on a first-to-declare basis. Steep declaration fees of $20,000 or more are meant to discourage customers from prematurely declaring a disaster.

Finally, support for a company's particular platform is a given, but the availability of additional equipment, especially for a growing company, is a major concern. "With IBM, if you need to change your equipment, you just call your representative, and within 30 days, the equipment is there," Scherkenbach says.

When Shared Services chose Comdisco, cost wasn't the determining factor. Culbertson was more concerned with the amount of equipment that would be available, the telecommunications capabilities, testing policies and the physical location.

Radding is a free-lance writer based in Newton, Mass.

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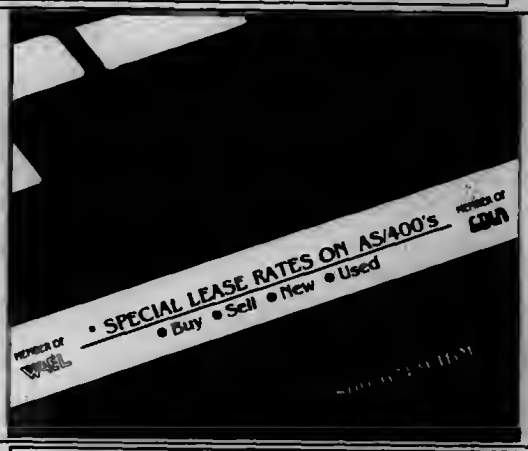

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Pizza chain delivers multimedia training entree to its managers

Head of the Class is a monthly column exploring innovative training approaches throughout corporate America.

BY RICHARD SMOLA
SPECIAL TO CW

Many companies cannot afford to have their key managers out of the office for long hours of classroom training. This situation is especially true in the restaurant business, where a manager's presence can make a difference in the daily performance of the staff.

Realizing this problem, information systems trainers at Pizza Hut, Inc. chose to serve up a training solution for a new labor management application to its restaurant managers by creating an on-site multimedia program.

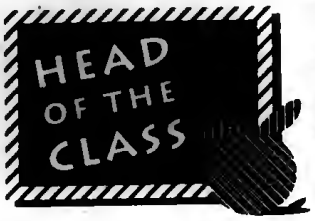
The application, Automated Restaurant Management System (ARMS), runs on newly purchased Intel Corp. 80386-based AT&T personal computers along with Norand Corp. point-of-sale devices installed in all restaurants. ARMS, a Unix-based application, maintains an order history of everything that Pizza Hut sells in each restaurant. The benefits are threefold: ARMS helps managers project sales, it forecasts how much food and supplies to order for a given period of the year based on previous years, and it furnishes information that can help create efficient labor schedules.

However, ARMS is a complex system to learn and teach. As a result, the technical training team decided against its usual method of placing restaurant managers in a classroom for three days, lecturing them on everything they need to know about ARMS and expecting them to retain the information.

Cost conscious

One of the issues that led the training team to choose multimedia was the cost of training. The classroom approach would not work for ARMS training because travel and living expenses would be a continual financial drain: Pizza Hut restaurants are spread out across the country, so the costs of travel would mount quickly.

Also, while Pizza Hut's staff turnover is low, training new management staff to use ARMS via the classroom method would present a labor- and cost-intensive challenge. On the other hand, the costs of multimedia are expensive up-front but are justifiable because of the significant savings in ongoing training. Projections indicate that development costs of multimedia would break even in approximately 1½ years.



Another major consideration for Pizza Hut trainers was job interference. When managers are pulled away from their restaurants, productivity suffers. Furthermore, having managers out of the restaurant for training would mean lost sales. Multiply that factor by 3,000 Pizza Hut restaurants, and a troublesome financial figure unfolds.

After pinpointing all of the obstacles in the training path, the team decided to proceed with a store-based computer training program.

To create the training materials for this approach, Pizza Hut teamed up with Universal Training Systems Co. in Chicago. After 10 months of intense planning and several mid-project changes, Pizza Hut had its training solution ready to roll.

The program was built around a hands-on philosophy that involved video, computer-based training (CBT) and printed materials. The team used video displayed separately from the PCs to present overall concepts in an easy-to-digest manner, hardcopy materials to capture frequently updated information and CBT to capture complex topics such as analysis skills and how to make decisions. All materials are presented to the trainees in sequence.

After the training team completed the on-site multimedia training program, they compared the classroom method with the new method. Trainers looked at the training times, the number and types of questions and the accuracy of the required ARMS output for these two different scenarios.

Trainees who were tested on the new on-site approach completed their training on time, had almost no questions or problems and produced the required ARMS output without error.

The success of the program was even more surprising because 70% of the managers hadn't used a computer before they used ARMS. Overall, the managers' feedback was very positive.

Extra toppings

An added benefit to the multimedia approach is that Pizza Hut is now more equipped to determine training competency through an on-line certification process. Through the use of CBT, managers are presented with realistic scenarios that could happen at the restaurant, and they must respond by interacting with the computer. If managers don't achieve a certain level of competency, they're given remedial assignments and the certification must be repeated. This process ensures that the ARMS concepts have been learned and can be applied in real-life situations.

Multimedia is now a favored method in Pizza Hut's training program. Plans for the future include delivering other training topics such as management skills and basic operations testing on CBT. The training team is currently building the successor to ARMS CBT: a performance support system. This approach will combine an on-line advisory package with CBT and multilayered, on-line Help functions.

Smola is a manager of development and training at Pizza Hut corporate offices in Wichita, Kan.

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INDUSTRY ALMANAC

INITIAL PUBLIC OFFERINGS

The nation's current economic recession and role in the Persian Gulf war may be deterring some private computer firms from going public now, but not **Zilog, Inc.** After 17 years on the semiconductor circuit, the Campbell, Calif.-based firm went public Thursday, offering 2 million shares for $11 each. Its Z80 chip made Zilog a contender for IBM's business in the early days of personal computing, but Zilog retreated into the shadows after IBM chose **Intel Corp.** as its microprocessor supplier.

"Had IBM picked the Z80, Zilog might carry the same glamour that Intel does today," one analyst said. Instead, Zilog now gambles at a different table, tying its fortune to logic chips used in data communications products.

However, that may not be a bad place to be these days. Data communications and networking products are "a pretty good gamble because companies have to link with others in order to make it now," said John Rohal, communications analyst at Alex. Brown & Sons, Inc. in Baltimore.

Promise behind the danger

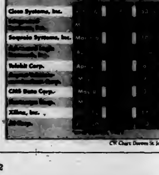
Rohal acknowledged that networking can be a "treacherous" industry to enter because connection standards and technologies change more quickly than those for other arenas, but he emphasized that the sector holds promise.

Indeed, networking firms dominated those entering public trading last year. Half of the 10 computer firms to hit the open market from January to June 1990 peddled some kind of networking product, according to IDD Information Services, Inc., a New York research firm (see chart below).

The timing was apparently right for **Cisco Systems, Inc.**, a bridge, router and server vendor based in Menlo Park, Calif. The firm opened at $18. One year later, Cisco stock has just about tripled, closing Wednesday at $53.88. Not all network firms have fared as well. Sunnyvale, Calif.-based **Telebit Corp.** opened at $10 but now trades at $6.88, down approximately 31%.

Elsewhere on last year's initial public offering list, IBM Personal Computer clone and add-in board makers such as Advanced Logic Research, Inc. (ALR) and Rasterops Corp. have seen mixed emotions from investors. Rasterops, based in Santa Clara, Calif., has jumped 75% in its nine months as a public firm, from $12 to $21.13. However, ALR, based in Irvine, Calif., closed Wednesday at $14, just a hair above its original asking price.

KIM S. NASH



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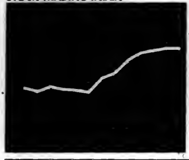

THIS WEEK'S HIGHLIGHTS

• Novell, Inc. rose 3¼ points last week to close Thursday at 48⅞, after reporting that first-quarter profits doubled over last year's first-quarter total. Rival Microsoft Corp. was not outdone, however, gaining 3¾ points to 103¾.

• IBM took a major wallop last week, losing 6¾ points to close Thursday at 128¾. Stephen K. Smith, an analyst at Paine Webber, Inc., downgraded his investment rating for IBM from "buy" to "hold" early in the week.

• The market hit a lull after the announcement of the end of the Persian Gulf war, causing some shares to decline, including Digital Equipment Corp., which skidded 3⅞ points to 72⅝. Other hardware stocks also suffered losses. Compaq Computer Corp. slipped 2⅜ points to 69¼ and Apple Computer, Inc. ended Thursday at 57¼ points, down 1¾ for the week.

• Among semiconductor makers, Intel Corp. lost 1¾ points to 47¾, and Motorola, Inc. stumbled 1⅛ points, closing Thursday at 59⅞.

Computerworld Stock Trading Summary

CLOSING PRICES THURSDAY, FEB. 28, 1991

TOP PERCENT GAINERS	
Alloy Computer Prod.	49.47
General Datacomm Inds.	18.18
Micron Technology	18.10
Goal Systems Int'l	17.54
Intergraph	16.22

TOP PERCENT LOSERS	
Micrografx	-22.38
Ultimate Corp.	-19.05
Phoenix Technologies	-11.11
EMC Corp.	-10.98
Data General Corp.	-10.53

TOP DOLLAR GAINERS	
Microsoft Corp.	3.75
Novell Inc.	3.25
Aldus Corp.	3.25
Intergraph	3.00
Autodesk Inc.	3.00

TOP DOLLAR LOSERS	
IBM	-6.75
Micrografx	-6.63
Digital Equipment Corp.	-3.88
Compaq Computer Corp	-2.38
Borland Int'l	-2.25

Exch	52-Week	Range		Feb. 28 Close	Wk Net Change	Wk Pct Change
Communications and Network Services				**Up 1.56%**		
OTC	19.00	5.38	3COM Corp.	9.00	0.13	1.41
NYS	28.75	52.50	American Info Techs Corp.	68.00	0.00	0.00
NYS	44.13	29.00	AT&T	33.38	0.13	0.38
OTC	9.63	0.88	Artel Communication Corp.	3.00	0.13	4.35
NYS	56.25	89.50	Bell Atlantic Corp.	49.00	-0.38	-0.76
NYS	57.63	49.00	Bellsouth Corp.	51.75	-1.50	-2.82
OTC	15.50	8.25	Compression Labs Inc.	15.88	0.00	0.00
NYS	39.13	23.88	Contel Corp.	38.13	0.13	0.32
OTC	4.50	1.75	Data Switch Corp.	4.00	-0.06	-1.55
NYS	28.75	8.88	Digital Comm. Assoc.	17.00	1.38	8.80
OTC	23.75	12.25	Dynatech Corp.	22.50	2.00	9.75
OTC	12.88	5.50	Fibronics Int'l Inc.	8.88	-0.25	-2.74
OTC	4.00	1.75	Gandalf Technologies Inc.	2.75	-0.06	-2.24
NYS	4.50	1.63	General Datacomm Inds.	3.25	0.50	18.18
NYS	34.13	23.50	GTE Corp.	21.13	0.00	0.00
OTC	0.75	0.75	Infotron Systems Corp.	0.88	0.00	0.00
NYS	60.88	40.25	ITT Corp.	55.88	-0.75	-1.32
OTC	44.13	17.88	MCI Communications Corp.	27.00	0.50	1.89
OTC	21.00	2.75	Microcom Inc.	9.00	0.75	14.29
NYS	34.38	4.00	Network Equipment Tech.	8.25	0.38	8.38
OTC	14.63	4.00	Network General	11.25	-0.25	-2.17
OTC	18.80	8.13	Network Systems Corp.	11.25	0.00	0.00
NYS	31.00	22.13	Northern Telecom Ltd.	29.38	-0.88	-2.89
OTC	51.25	17.25	Novell Inc.	48.88	3.25	7.12
NYS	88.50	67.00	Nynex Corp.	74.50	-1.50	-1.97
NYS	47.88	88.25	Pacific Telesis Group	42.25	0.38	0.89
ASE	12.38	4.75	Penril Corp.	12.00	0.00	0.00
NYS	29.13	8.88	Scientific Atlanta Inc.	15.00	-0.88	-2.44
NYS	88.60	47.25	Southwestern Bell Corp.	63.75	-1.00	-1.83
NYS	48.38	20.63	United Telecom	24.50	0.00	0.00
NYS	40.75	32.38	US West Inc.	36.63	-0.50	-1.25
Computer Systems				**Off 0.58%**		
OTC	9.75	0.88	Alliant Computer Sys.	1.00	0.00	0.00
ASE	19.88	10.00	Amdahl Corp.	14.75	-1.00	-6.35
OTC	62.25	24.25	Apple Computer Inc.	57.25	-1.75	-2.97
OTC	13.88	4.88	Archive Corp.	7.75	0.13	1.84
OTC	29.25	7.13	AST Research Inc.	24.80	1.88	8.61
NYS	7.00	3.88	Bolt, Beranek & Newman	6.63	0.00	0.00
NYS	16.88	4.60	Commodore Int'l	16.88	-1.00	-5.59
NYS	74.25	35.50	Compaq Computer Corp.	69.25	-2.38	-3.32
OTC	3.00	0.13	Computer Automation Inc.	1.19	0.03	2.75
NYS	21.63	8.75	Control Data Corp.	12.63	0.38	3.06
NYS	20.88	8.38	Convex Computer	17.13	-0.63	-3.52
NYS	51.25	60.00	Cray Research Inc.	41.25	0.88	0.81
NYS	13.25	3.50	Data General Corp.	8.50	-1.00	-10.53
NYS	3.88	0.75	Datapoint Corp.	2.88	0.00	0.00
OTC	69.88	5.63	Dell Computer Corp.	25.25	-1.88	-8.10
NYS	95.13	45.60	Digital Equipment Corp.	72.63	-3.88	-5.07
NYS	38.13	13.75	Harris Corp.	24.63	0.63	2.60
NYS	50.38	24.88	Hewlett Packard Co.	40.63	-0.63	-1.32
NYS	139.75	96.25	IBM	128.75	-6.75	-4.98
OTC	14.00	7.75	Information Int'l	9.00	-0.25	-2.70
OTC	23.50	10.50	Intergraph	21.50	3.00	16.22
NYS	3.13	0.50	MAI Systems Corp.	0.75	0.00	0.00
NYS	149.88	114.00	Matsushita Electronics	137.25	1.13	0.83
OTC	28.00	9.00	Mentor Graphics Corp.	16.25	-0.75	-4.41
NYS	98.00	44.60	NCR Corp.	98.00	6.88	6.08
OTC	28.50	11.00	Pyramid Technology	20.00	-0.50	-2.44
OTC	34.00	8.75	Sequent Computer Sys.	15.50	0.75	5.08
NYS	43.50	16.00	Silicon Graphics	38.75	-0.38	-0.93
NYS	30.25	14.63	Stratus Computer Inc.	28.38	-0.25	-0.87
OTC	37.25	15.00	Sun Microsystems Inc.	32.13	1.00	4.80
NYS	30.13	8.88	Tandem Computers Inc.	18.38	-0.63	-4.49
NYS	30.80	23.50	Tandy Corp.	30.88	-1.00	-8.14
OTC	88.50	8.75	Teradata	15.00	1.25	9.08
NYS	7.88	1.88	Ultimate Corp.	4.25	-1.00	-19.05
NYS	17.13	1.75	Unisys Corp.	4.38	0.38	9.38
ASE	6.25	0.00	Wang Labs Inc. (b)	3.38	0.00	0.00
Software & DP Services				**Up 0.93%**		
OTC	50.75	17.00	Adobe Systems Inc.	48.13	0.63	5.77
OTC	46.60	18.75	Aldus Corp.	44.25	3.25	7.88
OTC	24.00	12.00	American Mgmt. Systems	22.80	1.88	8.83
OTC	18.25	7.50	American Software Inc.	13.00	0.00	0.00
NYS	3.63	1.38	Anacomp Inc.	2.63	0.13	5.00
OTC	23.50	10.00	Analysts Int'l	14.50	-0.25	-1.69
OTC	15.13	4.88	Ashton Tate	7.88	0.75	10.53
OTC	10.25	4.00	ASK Computer Sys.	6.38	0.06	0.00
NYS	66.25	49.25	Auto Data Processing	62.38	0.13	0.20
OTC	60.25	32.00	Autodesk Inc.	48.75	3.00	6.56
OTC	30.00	12.00	BGS Systems Inc.	29.75	0.75	2.59
OTC	42.80	17.75	BMC Software Inc.	38.25	0.50	1.32
OTC	21.50	11.00	Boole & Babbage Inc.	14.00	0.50	3.70
OTC	53.75	12.50	Borland Int'l	48.25	-2.25	-4.49
NYS	11.88	0.96	Businessland Inc.	2.38	0.00	0.00
OTC	18.80	4.88	Cognos Inc.	16.50	2.00	13.75
NYS	18.88	4.88	Computer Associates	9.13	-0.25	-2.67
OTC	17.75	7.75	Computer Horizons	13.75	-1.00	-6.75
NYS	60.75	28.75	Computer Sciences	60.25	1.63	2.77
NYS	12.25	8.63	Computer Task Group	10.25	0.63	6.49
OTC	25.25	13.00	Comshare Inc.	15.88	-1.63	-9.29
OTC	18.00	3.75	Corporate Software	11.50	0.50	4.35
NYS	47.00	27.25	General Motors E (EDS)	41.63	0.38	0.91
OTC	16.88	7.25	Goal Systems Int'l	16.75	2.50	17.54
OTC	4.75	1.88	Hogan Systems Inc.	3.50	-0.13	-3.45
OTC	6.75	5.00	Index Technology	9.13	0.13	1.39
OTC	19.88	7.75	Information Resources	15.75	0.13	0.80
OTC	17.50	2.63	Informix Corp.	5.88	0.38	6.82
OTC	7.88	1.88	Intellicorp Inc.	2.13	0.06	3.01
OTC	8.00	2.50	Interleaf Inc.	6.38	-0.38	-5.52
OTC	36.00	10.00	Knowledgeware Inc.	33.50	1.50	4.69
OTC	38.50	16.75	Legent Corp.	38.25	1.38	3.75
OTC	39.25	12.50	Lotus Development	22.00	0.25	1.15
OTC	32.00	13.63	Micrografx	23.00	-6.63	-22.38
OTC	109.00	50.75	Microsoft Corp.	103.75	3.75	3.75
NYS	9.88	4.00	On Line Software Int'l	8.38	0.38	4.69
OTC	28.38	4.88	Oracle Systems	9.00	0.00	0.00
NYS	17.88	7.00	Pansophic Systems	11.50	-0.50	-4.17
OTC	7.88	1.25	Phoenix Technologies	5.00	-0.63	-11.11
NYS	51.63	31.63	Policy Management Sys	49.25	-0.63	-1.25
NYS	23.63	11.50	Reynolds & Reynolds	18.00	-0.88	-1.94
OTC	18.13	6.88	Sage Software Inc.	9.13	-0.13	-1.35
OTC	24.00	14.75	SEI Corp.	23.25	0.50	2.20
OTC	18.88	12.25	Shared Medical Systems	17.00	-0.13	-0.73
OTC	29.25	12.00	Software Publishing Corp.	28.25	2.75	10.88
NYS	11.25	5.50	Sterling Software	10.88	0.25	2.35
OTC	26.00	9.50	Sungard Data Sys.	13.00	-0.50	-3.70
OTC	44.50	17.00	Symantec Corp.	43.63	0.38	0.87
NYS	24.88	4.50	System Center Inc.	6.00	-0.38	-5.88
OTC	37.25	12.75	System Software Assoc.	19.88	0.13	0.63
OTC	27.88	4.75	Wang	10.88	-1.88	-10.00
Semiconductors				**Up 2.92%**		
NYS	25.88	18.13	Advanced Micro Devices	22.25	0.50	2.30
NYS	10.13	5.50	Analog Devices Inc.	9.88	0.75	8.22
OTC	23.50	5.25	Chips & Technologies	11.25	-0.25	-2.17
OTC	52.00	28.00	Intel Corp.	47.75	-1.75	-3.54
NYS	13.00	9.13	LSI Logic Corp.	8.13	0.00	0.00
NYS	18.38	8.75	Micron Technology	19.50	2.38	18.10
NYS	88.38	45.75	Motorola Inc.	60.13	-1.13	-1.84
NYS	9.88	3.00	National Semiconductor	6.88	-0.38	-5.17
NYS	44.00	22.50	Texas Instruments	41.50	-0.50	-1.19
OTC	12.25	6.08	VLSI Technology	7.50	0.13	1.69
ASE	14.88	4.00	Western Digital Corp.	4.50	0.25	5.88
Peripherals & Subsystems				**Up 1.09%**		
OTC	2.38	0.06	Alloy Computer Prod.	0.88	0.08	49.47
OTC	2.28	0.88	Apertus Technologies	1.88	-0.06	-3.25
OTC	24.00	7.50	Banctec Inc.	8.75	-0.50	-4.88
ASE	9.25	4.13	Cognitronics Corp.	8.25	0.75	6.82
NYS	31.25	14.63	Conner Peripherals	23.88	-2.25	-8.61
ASE	22.00	7.00	Dataram Corp.	10.75	0.00	0.00
NYS	10.88	4.25	EMC Corp.	6.13	-1.00	-10.98
NYS	47.25	33.75	Eastman Kodak Co.	43.75	-2.00	-4.37
OTC	8.88	4.88	Emulex Corp.	9.00	0.13	1.41
OTC	34.50	14.00	Evans & Sutherland	60.25	0.75	0.89
OTC	6.50	6.38	Iomega Corp.	0.75	0.50	9.52
OTC	28.25	8.75	IPL Systems Inc.	27.00	-0.50	-1.89
OTC	2.08	0.13	Masstor Systems	0.63	0.00	0.00
OTC	17.00	2.63	Maxtor Corp.	4.00	-0.13	-3.03
OTC	18.88	6.88	Micropolis Corp.	11.13	-0.50	-4.30
NYS	28.75	73.63	3M Corp.	88.50	0.88	1.00
OTC	14.50	8.00	Printronix Inc.	8.50	-0.25	-2.86
NYS	21.38	8.60	QMS Inc.	17.13	-1.13	-6.18
OTC	28.75	11.88	Quantum Corp.	23.88	-0.88	-3.61
NYS	6.88	4.38	Recognition Equipment	6.88	-0.13	-2.08
OTC	8.50	4.00	Rexon Inc.	8.00	0.50	6.67
OTC	18.75	8.63	Seagate Technology	14.38	-0.63	-4.17
NYS	38.25	11.00	Storage Technology	27.88	0.88	3.24
OTC	4.00	1.08	Tandon Corp.	2.22	-0.22	-8.37
NYS	22.88	11.63	Tektronix Inc.	20.00	-1.13	-5.33
OTC	0.98	0.19	Televideo Systems	0.25	0.03	14.19
NYS	28.75	29.00	Xerox Corp.	58.75	2.25	4.13
Leasing Companies				**Up 3.68%**		
OTC	15.00	8.88	Amplicon Inc.	14.50	1.75	13.73
OTC	4.88	0.31	Capital Associates	0.53	-0.03	-5.88
NYS	88.50	14.88	Comdisco Inc.	25.88	-1.38	-5.05
OTC	18.25	6.88	LDI Corporation	12.25	0.00	0.00
OTC	6.88	0.88	Selectcom Inc.	3.75	0.50	15.38

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IBM

CONTINUED FROM PAGE 1

said they had no interest. The figure could reflect the low number of outsourcing vendors offering processing services on non-IBM mainframes, Moschella said.

DEC shops indicated a relatively high interest in outsourcing, with 20.7% considering or pursuing the move. The survey defined outsourcing as an organization "deciding to turn over all or part of its IS operations to a third-party organization."

The client/server computing concept, however, received a lukewarm response. More than half (52%) of all respondents said they have no plans to adopt the model or said they agreed with the statement that client/server computing is "a buzzword of unclear meaning." Thirty-five percent said they have moved, are moving or are planning to move to a client/server model.

The IBM Application System/400 base proved to be the most resistant to downsizing. About two-thirds of AS/400 users said they are not pursuing any applications downsizing, which contrasts with a base majority (51.6%) that is doing some downsizing. Only 15% of AS/400 sites are looking at outsourcing, and a whopping 91% said they have no plans to move to a Unix-oriented open systems strategy.

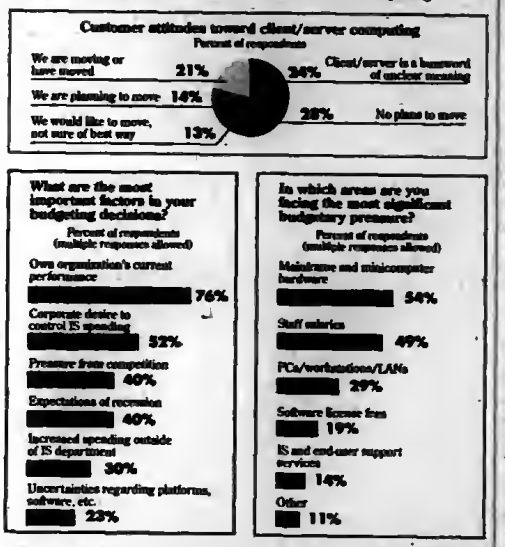
"The AS/400 base is the most isolated from all the trendy things," Moschella said. "IBM has always done a good job isolating that base from a competitive challenge. Vendors who think they're going to attack it never get anywhere."

As a reason for slowed IS spending, the oft-cited "user confusion" idea was contradicted by the survey results. When asked to rate the most important factors in budgeting decisions, only 23% cited "uncertainties regarding platforms or software" as a factor.

The overwhelming No. 1 factor was their own company's current financial performance, which was cited as a budgeting factor by 76% of respondents.

Under pressure

A survey of 1,500 IS professionals finds widespread budgetary pressures and an almost equal split in attitudes on client/server computing



Source: International Data Corp. CW Chart: Paul Moch

Interleaf announces active document tool

BY RICHARD PASTORE
CW STAFF

BOSTON — One year after it first demonstrated its active documents technology, Interleaf, Inc. will unveil a developers tool kit this week at the Seybold Seminar '91. The kit will allow users to add intelligent capabilities to their own Interleaf documents rather than contracting with Interleaf to do it.

Active documents generated a stir last year because of their unusual ability to embed intelligent activity into basic documents. For example, active documents can be programmed to automatically look up and plug in data from other databases, electronically mail themselves to appropriate persons at appropriate times and generally "behave" in a variety of ways based on programming or user input.

Although it has not taken the industry by storm, "this is a very significant technology, not in terms of the number of users, but in terms of what it does. It's the way the world is going to work eventually," said Esther Dyson, editor of the New York-based newsletter "Release 1.0."

Several other vendors have discussed the capability. Microsoft Corp. recently proposed similar object linking and embedding for the Windows 3.0 operating environment and Windows-based applications.

Vendors such as Microsoft "have correctly figured out that some of these capabilities are appealing for nearly any user," said Amy Wohl, president of Wohl Associates in Wynnewood, Pa., and editor of "The Wohl Report on End-User Computing."

Interleaf users said the technology is contributing to streamlined document management.

Amoco Production Co., for example, is using active documents to link on-line construction specification forms to standards guidelines stored on compact disc/read-only memory (CD-ROM). "With the intelligent ability, engineers filling out the forms can fire up the CD-ROM and reference the exact paragraph they need to answer any standards question," Amoco associate engineer Steven Warburton said.

The form is also programmed to skip over questions when it determines them to be inappropriate. For example, only certain metals can be used during construction in corrosive environments. If a user indicates the environment is corrosive, the document knows enough to list only suitable metals for the engineer's selection.

> "ENGINEERS FILLING OUT the forms can fire up the CD-ROM and reference the exact paragraph they need."
>
> STEVEN WARBURTON
> AMOCO

In the documentation department of oscilloscope maker Tektronix, Inc., active documents are performing repetitive tasks such as spell checking in background mode. The firm also said it plans to program its documentation to send itself to company officials on a preset review schedule, said Carolyn Strong, group documentation manager.

Interleaf users said they prefer customizing active documents in-house and are looking forward to obtaining the tool kit.

"We will do all the development in-house. We wouldn't want to do it any other way," said David Trebilcock, construction manager at Ontario Hydro, a Canadian utility company. The firm is moving paper-based regulatory documentation to the Interleaf environment.

Pirate boards a perplexing problem

BY MICHAEL ALEXANDER
CW STAFF

Electronic bulletin boards are to many computer enthusiasts what malls are to teenagers: places to swap gossip, buy goods and hang out when there is little else to do. Increasingly, some boards can also be places where users can traffic in pirated software, typically games, according to some experts and software manufacturers.

"They are all over the place," said Ian Murphy, a computer security consultant and president of IAM/Secure Data Systems, Inc. in Philadelphia. "In this area, you can join boards for $15, $20, $30 and get unlimited amounts of software. Some of these boards have 100M to 200M bytes of software."

For example, a *Computerworld* reporter who logged onto an "elite" section of an electronic bulletin board run by Microsystems Software, Inc., a software publisher based in Framingham, Mass., was given access to some 300M bytes of compressed games. A check with several of the publishers of those games — including Accolade and Sierra On-Line, Inc., most of whose catalogs were posted on the board — revealed that Microsystems was not authorized to copy and distribute game software published by those firms.

"We were going to delete that section anyway," said Richard Gorgens, president of Microsystems, when the *Computerworld* reporter called to inquire about the stockpile of what some publishers said were bootleg copies of their software. "There are a lot of files there using up space," Gorgens said.

> LAW ENFORCERS SAID the problem of software piracy is growing, both in this country and abroad, but noted that successful prosecution of board operators is rare.

When pressed as to whether he was aware that the software on the company's board was asserted to be pirated, Gorgens declined to acknowledge directly that it was there without authorization, although he said "he would get rid of it."

The entire game software section was removed from the board the next day. In its place was a message from Gorgens saying the game software had been deleted, along with an offer to give prorated refunds to elite subscribers.

Growing concern

Law enforcers said the problem of software piracy is growing, both in this country and abroad. However, they noted that successful prosecution of board operators is rare.

Last year, New York State Police arrested a 17-year-old student for unlawful duplication of computer-related material, among other crimes. Police said the youth was a member of an international software piracy group that ran a bulletin board in Chicago called Paradox. The "price of admission" to the board was a copy of a recently published program, according to Donald Delaney, supervisor of the major crime squad.

Not much can be done to shut down what amounts to electronic warehouses containing stolen goods, said Ken Wasch, executive director of the Software Publishers Association (SPA). The SPA actively investigates allegations of software piracy but has prosecuted only one bulletin board operator (two years ago), Wasch said.

"We have a hard time fighting piracy of computer games because to do so requires going after individuals in their homes," Wasch said. The SPA is currently working with the Federal Bureau of Investigation to gather evidence against several bulletin board operators, he said.

There is a pirate board in "every city and town," according to Jeff Hoff, director of marketing at Accolade, a San Jose, Calif.-based games software publisher. "It is a huge problem, particularly for Accolade" because of the popularity of the company's games, Hoff said.

The difficulty and expense of investigating and prosecuting individuals for software piracy outweigh the benefits, Hoff said. Accolade would not use "time, energy, effort, lawyers and money" to go after a pirate bulletin board operator "unless it is hugely obvious that he is trying to make a living at it."

NEWS SHORTS

NCR's ESOP heads for court

A federal district court judge in Ohio last week set March 11 and 12 as court dates for hearings on NCR Corp.'s newly created employee stock ownership plan (ESOP). The ESOP was set up recently to hold 8% of NCR's stock at a time when AT&T is bidding to take over the company. Separately, AT&T sent a letter to Federal Communications Commission Chairman Alfred Sikes arguing that there was no basis for NCR's request that the FCC review the takeover attempt.

Microsoft suit advances

Microsoft Corp. won a summary judgement last week in a suit against five parties accused of counterfeiting MS-DOS. The defendants admitted to manufacturing and selling at least 25,000 look-alike DOS packages through software dealers in the U.S. Microsoft claimed lost income of $1.8 million. Microsoft and Everex Systems, Inc. filed suit in federal court in San Francisco last year against J&S International, JIP Design, Joe Fok, Susan Chan and Norman Chan. Damages will be settled in court beginning in May. Microsoft said MS-DOS is the most widely counterfeited software in the world.

Panasonic adds to printer line

Panasonic Communications & Systems Co. introduced a replacement for its KX-1124 dot-matrix printer last week. With one million U.S. installed units, it is the largest selling dot-matrix printer in the DOS environment, according to BIS Strategic Decisions in Norwell, Mass. The new P1124I is a 24-pin machine that provides more fonts (seven) and faster speed than its predecessor. The machine features a front-panel LCD display and super letter quality mode at 360 by 360 dot/in.

Ask releases application generator

Ask Computer Systems, Inc. announced an application generator last week that brings fourth-generation language (4GL) programming to character-based terminals. Ingres/Vision replaces an older Ingres product, Query By Forms (QBF). Two key features that differentiate Ingres/Vision from QBF are the Frame Flow Diagram visual aid, which draws program elements on-screen as they are created, and the Visual Query Editor, which builds 4GL code based on user-defined parameters. Because the Vision generator is linked to an Ingres relational database management system, modules can be recalled from memory and reused, the firm said.

DEC's first OSF/1 version ready

Digital Equipment Corp. said it plans to begin shipping an early binary version of the Open Software Foundation's OSF/1 operating system software this week. The $1,040 developer's kit includes OSF/Motif Version 1.1, X Window System Version 11, Release 4, the Gnu C compiler and development tools. In another announcement at last week's Sun Expo in Boston, DEC demonstrated two of its own software products running on a Sun Microsystems, Inc. platform: Decwindows Motif and DEC Visual User Interface Tool. DEC officials said their development of "multiplatform software" will eventually extend to Hewlett-Packard Co. and IBM machines.

SPSS suit withdrawn

Former SPSS, Inc. President John Grillos withdrew his suit against the firm and its co-defendants last week. Grillos had filed suit on Oct. 12 in response to a private placement memorandum circulated by SPSS when it was negotiating a recapitalization plan with a group led by Morgan Stanley Venture Capital Fund, LP. The recapitalization went through, but Grillos said his shares were significantly undervalued at $4.04 per share (which SPSS later devalued to $2.08 per share) and asked for $37 per share. (Nonmanagement holders of Class B stock were compelled to sell under terms of the plan.) Two weeks ago, SPSS filed an appraisal action, which Illinois law requires in such situations. This action, coupled with three counterusits filed by SPSS, prompted Grillos to drop his suit.

IBM cuts PC prices 5% to 20%

Makes competitive move in response to Compaq's and Dell's price slashes

BY RICHARD PASTORE
CW STAFF

WHITE PLAINS, N.Y. — Coming only a few weeks after competition price cuts, IBM's 5% to 20% personal computer price slashing last week shows it is trying hard to keep pace. The move has also created a price gap for impending Intel Corp. I486-based products to fill, observers said.

Compaq Computer Corp. cut high-end PC prices two weeks ago by 13% to 21%. One week earlier, Dell Computer Corp. reduced prices across its whole line by as much as $900.

"IBM is forced to respond; they have to remain competitive," said Frank Michnoff, an analyst at Meta Group, Inc. in Westport, Conn.

IBM's 8% reduction on its Personal System/2 Model 30 prices reflects the weakening corporate position of Intel 80286-based systems, according to Ben Rose, an analyst at Technology Investment Strategies Corp. in Framingham, Mass.

IBM also cut 14% to 17% off the price of its popular Model 55SX and chopped prices for the first time on the Model 65SX. IBM's lack of a 20-MHz Intel 80386SX-based system has prompted it to make its 16-MHz 386SX boxes more attractive vis-a-vis the competition, Rose said.

Make way for intros

Cuts on the Model 80 pricing are potentially more strategic, analysts said. Not only are the 15% to 20% cuts intended to jump start slow sales, but they also make room for new introductions in the second quarter. Observers said they expect IBM to announce PS/2s based on the so-called Intel 486SX chip, a yet-to-be-announced 20-MHz version of the I486 that lacks a built-in math coprocessor.

A 486SX PS/2 would likely be priced at $11,000 to $14,000, depending on configuration, Rose said. This would fit snugly into the $2,000 price gap between the newly priced Model 80s and the I486-based Models 90 and 95.

Because of the modular design of the Model 90 and Model 95 motherboards, the machines can easily accept new processors. This has analysts expecting IBM to be one of the first with a 486SX box.

Intel has been sourcing the unannounced chips and is preparing for volume shipment, according to sources familiar with the chip maker's plans.

AT&T foe Carter dies; helped break Bell lock

BY JOANIE M. WEXLER
CW STAFF

Tom F. Carter, the man whose innovation and persistence spawned the telecommunications interconnect industry, died Feb. 23 at the age of 67.

Between 1959 and 1966, Carter sold thousands of his self-created Carterfones — simple couplers that connected two-way radios with telephones to allow direct conversation between a radio system caller and someone on the telephone network.

The telephone companies had objected to the interconnection on the grounds that foreign attachments were restricted by an AT&T tariff.

Carter filed an antitrust suit, resulting in the, 1968 Federal Communications Commission decision to strike down AT&T's tariff and rule that AT&T must show that third-party equipment will cause harm to the public network before it can be prohibited from attaching. The "Carterfone decision" opened the gates for firms ready to sell what the phone companies would not.

Carter was also founder of the North American Telephone Association, renamed the North American Telecommunications Association (NATA) in 1982. The association united telecommunications equipment manufacturers and distributors from all over the world. Carter was chairman and president of NATA from 1970 to 1974 and was chairman emeritus at the time of his death.

Ditchfield

FROM PAGE 1

Progressive, based in suburban Mayfield Heights, Ohio, has outpaced the automobile insurance industry in profit growth for the past five years. The company credits much of its success to a large database that helps it analyze more risk categories than other firms, thus finding profitable business in seemingly high-risk drivers whom its competitors refuse to insure.

Ditchfield will head an IS staff of 550 — fewer than one-third the size of MCI's — and inherit an IS budget of about $75 million, compared with $400 million at MCI. "I don't see it as smaller; I see it as very challenging," Ditchfield said. "I will be one of 10 key executives instead of one of 30 at MCI, so [the size] has a positive aspect, too."

Ditchfield will report to Bruce Marlow, Progressive's chief operating officer, and will serve on the executive operating committee that has responsibility for customer service. "That's the best part — I'm a customer service nut," Ditchfield said.

"Things will continue much as they did under Ditchfield's leadership," Zucco said. "The biggest change will be our global expansion. I hope to expand global services as successfully as we expanded the domestic services under Ditchfield."

Alan Tottle, former vice president of systems engineering and operations at MCI, said Zucco will continue Ditchfield's IS strategies. "Allan did an enormous amount for MCI, but it's not just one man; it's a team," he said.

Ditchfield joined MCI after six years as director of IS at archrival AT&T. He earned high marks for integrating IS in MCI's business with innovations such as running MCI's network software on more flexible commercial computers, overhauling the customer billing system and developing Integrated Network Management Service, an on-line link to customers' workstations.

MCI has a well-deserved reputation as a hard-charging workplace in which feisty Chairman William McGowan contacts key executives at night and on weekends via cellular telephones and portable facsimile machines. "Five years at MCI is like 10 anywhere else," Tottle said.

Ditchfield, however, said he found the MCI pace "addictive" and considers the MCI door to be open in the future. "I believe in McGowan's culture, where people can go do what they want and still be invited back," he said. "There's no reason to think that in five or 10 years I couldn't come back to MCI."

Ditchfield fills a job at Progressive that has been vacant since the May 1990 resignation of former Senior Vice President Rex Wolf. Progressive is an MCI customer, and Ditchfield said he plans to stay in touch with his former colleagues via MCI Mail.

Despite progress, doubt still remains with ISDN

BY JOANIE M. WEXLER
CW STAFF

NEW YORK — A fish-or-cut-bait pledge last week by ISDN architects to provide Integrated Services Digital Network (ISDN) connectivity between "millions" of nationwide users by year's end 1992 was met with tempered enthusiasm by an industry that has already waited more than a decade for the technology to fully kick in.

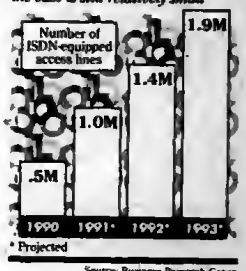
Because of ISDN's bandwidth limitations relative to other networking alternatives, users and analysts are taking some wind out of the sails of last week's milestone announcement that switch vendors AT&T, Northern Telecom, Inc. and Siemens Stromberg-Carlson have broken their interoperability stalemate to shake hands on a common implementation of key ISDN standards.

Lack of multivendor switch interoperability — fallout from AT&T's 1984 divestiture — has been a major ISDN glitch. While its resolution should help round out the "any-to-any" allure of ISDN, industry observers said ISDN still will not appeal to all.

"We have an enormous requirement to connect to hundreds of thousands of people in this country alone, but current ISDN speeds [up to 1.5M bit/sec.] probably won't meet our bandwidth needs," said Howard Maynard, senior vice president and director of MIS at Young & Rubicam, Inc., an international advertising agency based in New York.

Maynard said he "very much likes the concept" of ISDN's dial-up bandwidth and volume-based pricing." However, he said, he plans to install 100M bit/sec. Fiber Distributed Data Interface local-area networks in the near future and is "concerned about the disparity between the data transfer speeds inside a building and those between buildings."

Access
ISDN-equipped access lines are projected to increase rapidly, but the base is still relatively small



Source: Business Research Group
CW Chart: Marie Haines

Maynard said he is worried that emerging higher speed wide-area technologies such as Synchronous Optical Network and Switched Multimegabit Data Service will not be available in time to meet his needs.

The switch vendor agreement was coupled with promises from several regional Bell operating companies (RBOC) to offer Primary Rate Interface ISDN service by year's end 1992. Currently, users wishing to access a long-distance carrier's Primary Rate network must hook into it via another mechanism, such as a dedicated T1 line. Paying for a dedicated line offsets some of the cost efficiencies inherent in ISDN's switched nature.

The switch vendor and RBOC announcements mean many more companies and residential users will have nationwide switched connectivity all the way through the public telephony network for voice, data, video and image services.

However, for Richard Babin, manager of information systems at the Rochester, N.Y., Police Department, "ISDN is a local issue. We will eventually use ISDN for scanning and storing reports from our local precinct offices onto optical discs. But the national connectivity doesn't help."

Dubbed National ISDN 1, 1992's ISDN will fall slightly short of the functionality specified in the CCITT ISDN standards.

Phase 1 will not allow on-demand packet switching on ISDN's "B" (64K bit/sec.) traffic-bearing channels, according to Richard T. Aloia, assistant vice president of network access technology at Bellcore, the RBOCs' research and engineering arm.

The first release, he said, will allow users to "nail up" — and thus continually pay for — a 64K bit/sec. channel for packet switching, perform on-demand circuit switching and use the "D" signaling channel for control or on-demand packet switching.

Phase 2, slated to roll out one year later, will allow the B channels to be used for packet switching and a portion of the D channel to be used as a virtual private network connection, he said.

Some industry observers were still expressing frustration that ISDN is too little, too late.

"This is all a last gasp for ISDN," said Kenneth G. Bosomworth, president of International Resource Development, Inc. in New Canaan, Conn. He said millions of users can already access ISDN, but "very few have chosen to take advantage of it. If you split the customer market into 20 segments, only two or three will have requirements that are sensibly met by narrowband ISDN. That will still be true two years from now."

And the good news . . .

While industry observers agreed that ISDN will not be the be-all, end-all communications vehicle, many said they see the technology as complementary to other networking alternatives and valuable for cost efficiencies in certain applications.

Eastman Kodak Co., for example, plans to run electronic data interchange applications over ISDN to its many suppliers, customers and distributors, according to Charles J. Gardner, director of information technology infrastructure. In addition, Gardner said, Kodak is banking the success of some of its future products on the technology.

"We're considering offering the option of converting a roll of film to images on [compact disc/read-only memory] instead of to photographs," Gardner explained. "This would allow our customers to pull up the images on their TV set and go call Grandma. They can then send the images across the wide-area [network] and have a conversation with her at the same time."

Jeff Fritz, a data communications analyst at West Virginia University, added, "For a lot of applications, 64K bit/sec. is just fine. For trading files, for example, ISDN lines are faster and much more reliable than modems and analog lines."

Fritz uses Basic Rate Interface (144K bit/sec.) ISDN to connect remote users to local-area networks, which he said saves him several hundred dollars per month in T1 fees. He added that he expects his connectivity needs to expand soon.

JOANIE M. WEXLER

IBM fixing midrange disk drive woes

BY MARYFRAN JOHNSON
CW STAFF

Widespread disk drive failures on IBM midrange computers have forced the computer giant to replace between 1,000 and 2,000 of its 9335 drives in the past year, while manufacturing delays are bogging down shipment of its successor, IBM officials confirmed last week.

IBM is about halfway through a massive "preventative maintenance" program, begun in February 1990, to replace certain 9335 disk drives. The flawed drives, which develop spindle vibration after extensive use, were produced from June 1988 to March 1989 at IBM's manufacturing facility in Havant, England.

Industry analysts said that same manufacturing facility is now struggling with supplier problems as it ramps up volume production of the 9336 disk drive, the long-awaited successor to the 9335. Announced in August, the 5¼-in., 857M-byte 9336 drive is 38% faster than its predecessor and runs in both the RISC System/6000 and Application System/400.

William Reedy, IBM director of storage systems, declined to comment on shipping problems of the 9336 but acknowledged that customer "demand is exceeding our original estimate."

In the meantime, IBM is furiously peddling its older midrange disk drives — the 9335s and 9332s — offering steep discounting and special incentive programs.

Introduced in late 1986, the 14-in. 9335 drives sold at a breakneck pace, with an installed based now numbering more than 200,000, according to International Data Corp. (IDC) in Framingham, Mass.

Customer patience

"It has not been one of the best performers in the world, but customers aren't upset with IBM about it because IBM dealt with the problems," said David Vellante, an IDC analyst.

"We've had failures of 9335s on a frequent basis," said Leroy McDaniel, manager of midrange technology at Reynolds Metals Co. in Richmond, Va. "But IBM knows the bug is there, and they're trying to prevent hard failures with preventative maintenance, which is admirable."

Out of 50 drives at Reynolds headquarters, five have been replaced so far, but Reynolds sites in other states are also reporting problems, McDaniel said.

In a recent user survey that included 926 disk drive units, Reliability Ratings, Inc. in Needham, Mass., found that one out of 10 installed 9335s fails annually. That 10% failure rate was also confirmed by other sources in the industry.

Reliability Ratings found that the mean time between failure for 9335 drives was 84,939 hours — considerably poorer performance than the industry average for 5¼-in. drives, which often go 150,000 to 200,000 hours without a failure, said Greg Strakosch, president of Reliability Ratings.

Meta Group, Inc., a market research firm in Westport, Conn., recently published a warning to its customers, advising them against installing any more 9335 drives.

"The real problem for IBM is they don't have enough head disk assemblies to replace [the problem drives], and the 9336 is not shipping in full production yet," said Nili Young, an analyst at Meta Group.

Reedy called Meta Group's report "inaccurate" and said that IBM has enough disk assemblies to replace the flawed 9335s.

Despite the widespread nature of the problem, very few customers have reported any loss of data, in part because of the error detection mechanism located on the AS/400.

Second-class postage paid at Framingham, Mass., and additional mailing offices.
Computerworld (ISSN 0010-4841) is published weekly, with a single combined issue for the last week in December and the first week in January by CW Publishing/Inc., 375 Cochituate Road, Box 9171, Framingham, Mass. 01701-9171.
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TRENDS

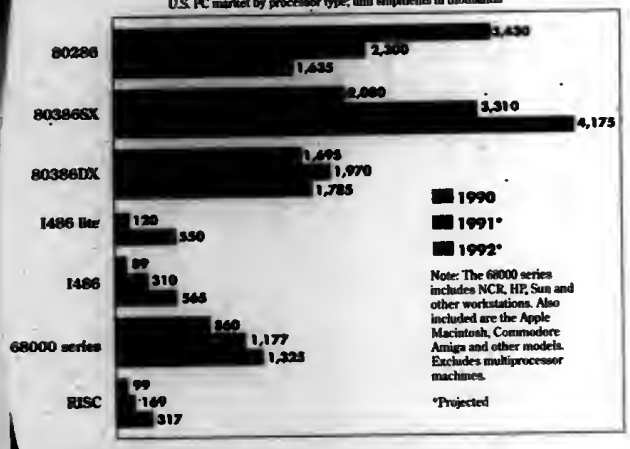
Personal Computer Market

As the U.S. PC market braces itself for a slowdown, price cuts and strategic product marketing in 1991 will make Intel Corp. 80386SX-based products one segment to watch

80386SX-based machines boast the most in 1991

Price drops will prompt buying in most areas, especially for 80386SX products, which are expected to drop in early 1991. I486-based machines will also fare well after a slow start

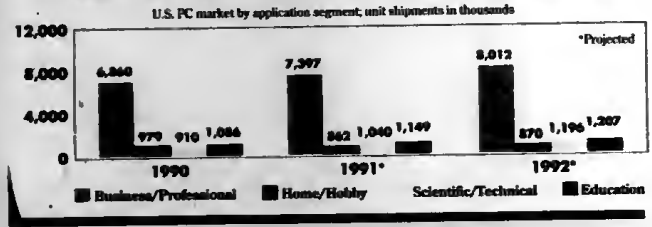
U.S. PC market by processor type; unit shipments in thousands



Application hot spots

The business and professional segment gets a boost from telecommuters and home-based businesses. Microsoft's Windows 3.0 will also spur new sales in the coming year

U.S. PC market by application segment; unit shipments in thousands



Source: International Data Corp., Framingham, Mass.

CW Chart: Doreen St. John

NEXT WEEK

Change keeps things rolling for the IS staff at Nissan's U.S. headquarters in Southern California. Manager's Journal takes a look at how a recent IS reorganization orchestrated by **Sheleme Sendaba**, vice president of IS and finance (left), and **Evan Wride**, director of IS, fits in with the company's battle against Toyota and Honda for U.S. market share.

Alan Levenson

Why would IS managers be interested in fuzzy logic, a concept based on imprecise reasoning rather than the yes/no logic of traditional computers? Because fuzzy logic techniques can have a positive impact on business applications. In Depth will clarify the idea of fuzzy logic and reveal the real-life ways in which it can be used in business.

INSIDE LINES

Dreams of days gone by?

Despite NCR Chairman and CEO Charles Exley Jr.'s seeming hatred of AT&T's takeover efforts, one systems integrator who used to work for NCR says his former colleagues tell him they are "excited" by the prospect of working for AT&T. "The prestige factor is a big thing for them," says the value-added reseller, who still works closely with NCR.

Hall of Shame nominee

Logisticon's 1990 disabling of Revlon's computers when Revlon allegedly failed to pay its bills was cited as one of 11 "Gutsy Decisions" of the year in business by *Industry Week* magazine. The publication called the three-day shutdown "the shot heard round the software world" but noted that Logisticon faces the challenge of assuring future customers that they won't suffer the same enforcement action.

DOS 5.0 slow to go

DOS 5.0, which is supposed to ship this month, is getting yawns from some pretty large beta testers. Among its weak points, we're told, are the following: It won't run in high memory, you can't reinstall over it if you flub the initial installation, it still lacks a decent user interface and file handling is "poor" and "slow as a pig."

Compaq takes pen in hand

Since IBM has allied itself with Go Corp. in the looming pen-based PC operating system rivalry, Microsoft has found its own partner. Compaq is expected to announce support for Microsoft's upcoming pen recognition system next week, promising a laptop or notebook PC line that will run the operating system and read input from a pointing device. In another case of hardware preceding software, Microsoft will demonstrate its new "Ballpoint" pointing device next week.

Network contention

A Netware user is eagerly awaiting what he says are reports that Novell is considering coming up with its own client operating system. It just so happens that Novell has inked a pact to bundle DR DOS with its ELS Netware, and our source is fervently hoping this means DR DOS will be that client.

Nothing to Sniff about

Plugging perhaps the most notable hole in its product line, Network General plans to introduce an enterprisewide network analyzer this spring. The firm's much-acclaimed Sniffer analyzer is now limited to working on one network at a time. A network administrator briefed by Network General said he was told the new product would "reverse one of Sniffer's shortcomings: its inability to report anything more than traffic surges from one network to another."

Hopefully, just as ineffective . . .

A virus has shown up in a Montreal business school, Ecole des Hautes Etudes Commerciales. The computer analyst who discovered the intruder, which he labeled the "Scud" virus, says it modifies the boot sector of a hard disk so it can no longer be accessed.

Tacky, tasteless and out of touch

Demonstrating remarkably bad taste, the Semiconductor Industry Association penned a letter to President Bush purportedly to congratulate him on his leadership of the Gulf war but actually to lobby for further trade tariffs. The association noted the use of American semiconductors in U.S. high-tech weapons and went on to make a pitch for a new agreement to open up Japan's market to U.S. semiconductor vendors. The men and women in uniform who put their lives on the line were relegated to one measly sentence in this missive.

Assistant News Editor Jim Connolly is taking over the gatekeeper role this week. Tips and questions should be directed his way at (800) 343-6474; you can also check in via facsimile at (508) 875-8931 or send electronic mail to COMPUTERWORLD *on MCI Mail; MHTS78A on Prodigy; or 76537,2413 on Compuserve.*

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